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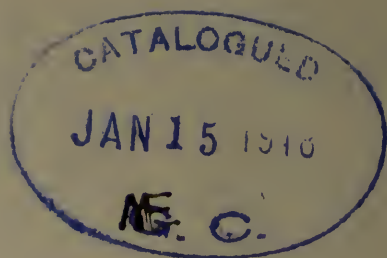
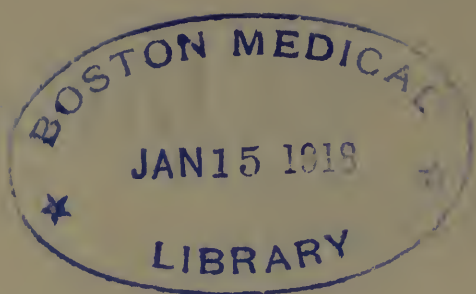
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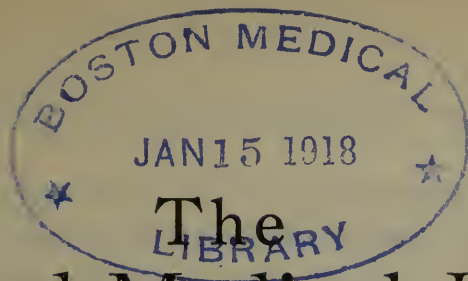
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No. 1

THE INTERPRETATION OF STEREO-ROENTGENOGRAMS OF THE MASTOID*

J. M. INGERSOLL, A. M., M. D.

Professor of Oto-Laryngology in the Medical Department of Western Reserve University, Cleveland, Ohio

The practical value of stereo-Roentgenograms of the head depends upon the correct interpretation of the stereoscopic picture. The only way to acquire skill in interpreting the picture is by practice and study. Fortunately it does not require the expenditure of much time or study to gain a reasonable amount of skill in interpreting the stereoscopic plates.

In order to identify positively in the stereoscopic pictures some of the landmarks in the bones of the skull, we took a macerated and cleaned skull, sawed off the top of the skull, uncovered the semi-circular canals in one mastoid and inserted copper wires in the canals. Then we took stereo-Roentgenograms of both mastoids of this skull, using the same technique that we use in the living subject. These plates gave us beautiful stereoscopic pictures of the mastoids and the copper wires located absolutely the position of the semi-circular canals. By studying these pictures and the skull alternately, the following structures can be definitely located: the external and internal auditory canals, all of the mastoid cells, the mastoid antrum, the semicircular canals, the groove of the lateral sinus and the jugular bulb, forming the floor of the tympanic cavity, the foramen lacerum posterior or jugular foramen, the foramen ovale, just anterior to the petrous portion of the temporal bone, the foramen lacerum medium showing dimly through the extreme anterior part of the petrous bone, the groove of the superior petrosal sinus on the posterior superior surface of the petrous bone, the foramen magnum, the grooves of the middle meningeal arteries, and the floor of the middle fossa of the brain.

*This paper was read before the Academy of Oto-Laryngology, at Memphis, Tenn., December 20, 1916.

The plates should be placed in the stereoscope first, so as to show the mastoid from the outside, that is, with the film side toward the observer. In this way the temporal bone is seen with its external structures in the foreground and the deeper structures in the background. Then by reversing the plates in the stereoscope, turning the smooth side of the plate toward the observer, keeping the right hand plate on the right side and the left hand plate on the left side, the mastoid is seen from the inside of the skull.

When stereoscopic plates of the mastoid in the living subject are examined they should be studied in the same way. First looking at the plates from the outside we can see the mastoid just as we will see it later in the operation, with the additional advantage of actually being able to look into and through the bone. The size of the mastoid can be accurately determined and we can see whether or not there are any cells extending forward into the root of the zygoma. The location of the lateral sinus can be clearly seen and its depth below the cortex can be determined with considerable accuracy. The size and position of the mastoid antrum can usually be definitely seen. The amount and character of the infection in the mastoid can be determined.

Normal mastoid cells transmit the Roentgen rays better than inflamed cells and slightly inflamed cells transmit the rays better than cells filled with granulation tissue and pus, hence in normal mastoids the cells and their walls and the underlying structures can all be distinctly seen. When there is only a mild inflammation in the cells, as in the early stage of acute otitis media, the cells all look dimmer and less distinct than they do in the normal mastoid. If the mastoid antrum and cells are filled with granulations and pus then the area thus involved shows much less distinctly on the plates. If the walls of the cells have been broken down by the suppuration and are necrotic, then the pictures show an exceedingly dull area which looks very much like an irregular foramen.

In other words, the stereoscopic plates show that there is a mild inflammation in the mastoid, or that there is pus and granulation tissue in it or that there are areas of necrosis and that the sinus or dura are probably exposed.

Abscesses in the brain apparently transmit the Roentgen rays about the same as the brain tissue does and so do not cast a shadow definitely enough to differentiate them from the brain tissue in most cases. We have had, however, several cases in which areas of

slight dulness in the brain have suggested brain abscess and the operative findings have confirmed the diagnosis. In some of these cases we have taken a second stereo-Roentgenogram before the gauze packing was removed from the abscess cavity and thus have been able to definitely locate the position of the brain abscess and verify the diagnosis of probable brain abscess, made on account of the clinical symptoms, and the suspicious areas of dulness in plates taken before the operation.

By careful study and comparison of such plates, made before and after the operation, much valuable information can be gained and we believe that, as our skill and experience in interpreting the plates increase, we will be able to diagnosticate brain abscesses with increased certainty.

Stereo-Roentgenograms of the mastoid not only give us much valuable information about our operative field in cases which must be operated upon, but they also help to determine whether or not an operation is necessary.

In cases of acute otitis media with pain over the mastoid antrum and tip, a stereo-Roentgenogram helps very much in determining whether or not it is advisable to operate immediately. If the stereoscopic plates show only a little dimming, compared with the normal, with no definite dull areas and the cell walls can be distinctly seen, then we may safely keep the patient under observation, for the inflammation in the mastoid will probably subside. If the plates show a pneumatic mastoid or distinctly dull areas in the mastoid, especially in the tip, and some of the cell walls have disappeared, such a case will probably never recover without an operation, and the sooner the operation is done the better is the prognosis.

So, too, in chronic otitis media, the stereoscopic plates help to determine the necessity of operative treatment. If the plates show that the middle ear and mastoid antrum only are involved, then there is a fair chance of curing such cases by attic irrigation and local treatment. If, however, the plates show a cholesteatoma in the antrum, casting a dense black shadow, or involvement of the cells around and below the antrum, or areas of necrosis, such a case should be operated upon immediately.

Usually in chronic suppurative otitis media the whole mastoid becomes sclerotic, most of the cells disappear, and the stereoscopic plates show the area of involvement in and around the antrum,

while the rest of the mastoid looks almost as dense as the petrous portion of the temporal bone.

If the plates show such a sclerotic process and there are no cells remaining in the inferior part of the mastoid, then it is not necessary to go down into the tip of the mastoid in a radical operation, but remove only as much of the mastoid as is needed for working space in the antrum and middle ear. Such cases naturally recover more quickly than those in which a more extensive operation is necessary.

Summary

Stereoscopic Roentgenograms of the mastoid give us much valuable, accurate information in regard to the mastoid, which cannot be obtained in any other way. They locate definitely the anatomical structures in the operative field. They show the extent and character of the pathological process. They show areas of necrosis in the bone, if there are any. They sometimes show the location of a brain abscess. They help to determine whether or not it is necessary to operate in doubtful cases.

I wish to thank Doctors Hill and Thomas for their interest in this work and the many valuable suggestions which they have made.

Chronic Maxillary Sinusitis.—W. E. Sauer, St. Louis (*Journal A. M. A.*, Dec. 30, 1916), reviews the surgical treatment of chronic maxillary sinusitis. He says the necessary specifications of a good method are a large opening or openings of sufficient size to permit thorough inspection and good drainage with the least disturbance of nasal function. This, he believes, can be accomplished by a modified Canfield, such as the Skillern method, or a Denker operation in which the inferior turbinate is left intact. The most important consideration in judging as to the necessity of a radical operation is that of the primary or secondary character of the maxillary sinus involvement. The claim of Jansen that if one sinus is infected all are is not tenable. When, however, the antrum is a reservoir of frontal or ethmoid suppuration to which it is secondary, and the trouble is not of too long standing, it is frequently necessary to cure only the primary trouble and then, at most, to treat the maxillary by lavage. Failure of the radical maxillary operation is frequently due to over-sight of such lesions as decayed teeth or necrotic bone, as well as to pathologic conditions in the nose, etc. The value of the Roentgen ray in detecting these conditions cannot be over-estimated. Systemic infections, like syphilis and tuberculosis also, here as elsewhere, must not be overlooked.

PSYCHONEUROSIS—EMOTIONALISM AS A GENETIC FACTOR*

By H. H. DRYSDALE, M. D., Cleveland

In this age of emotional instability, increasing numbers of individuals are seeking medical advice in regard to various subjective, vague but persistent complaints, which do not bear the ear-marks of any of the ordinary physical disorders portrayed in modern text books, but which nevertheless render many useful and capable citizens miserable, apprehensive, depressed and in some instances precipitate a state of confirmed helplessness.

Invariably the stethoscope, thermometer, speculum, urinalysis, sphygmomanometer, blood count, ophthalmoscope and other well recognized clinical means, fail to unearth a probable explanation or expose the underlying cause; and those of us who intuitively, or as a result of a warped medical training, unqualifiedly subordinate the disturbances of the psychism to those of the physical are quite apt to belittle these honest sufferers and deny them the consideration they legitimately deserve.

But medical procedure is changing and rapidly advancing and the progressive physician of today is endeavoring to equip himself with the knowledge and understanding necessary for the proper treatment of subjective manifestations which are not due to an antecedent bodily lesion but which are the result of a faulty working nervous organization, or are the expression of irritations, or disharmonic uprisings within the psychic sphere.

Those who have failed to take into account the all-absorbing fact that mankind is something more than physical, that it is possessed of a mind which is capable of feeling, which is cognizant of every bodily sensation and which may be disturbed by antagonistic influences, will not infrequently see a golden opportunity for performing a signal service slip by.

We have gone on day after day, subjecting a large number of false gastropaths, false enteropaths, false cardiopaths and false genitopaths to a carefully arranged plan of symptomatic therapy but without success. We have wondered at the tenacity and rebelliousness of their complaints and have chafed under our inability to cope with them. Apparently we could not rid ourselves of the deep-

*Read before the Lorain County Medical Society, Elyria, Ohio, February 13, 1917.

rooted conviction that some physical change was at the bottom of it all. We have become alarmed at complaints which appeared serious and by so doing have driven the sufferer deeper into the pit of chronicity. Had we been prepared, when exhaustive examinations proved negative, to seek an explanation elsewhere, to rip open the personality and expose its inner workings, it is quite possible that the true etiology would have been disclosed.

It should not be difficult to appreciate this philosophy, as the proposition that bodily functions are influenced by the mind has not been doubted from the earliest times. That sad news will alter the expression of a man's face and eyes, lower his physical tone and eliminate the feeling of hunger is a truism. That good tidings will increase a man's sense of well-being and urge him on to greater activity is equally certain. That continued failure in life keeps an individual thin, depressed and alters the nutrition of almost every tissue in his body is a condition to be observed in every-day life. That cheerful psychic influences increase one's resistance and have true curative worth in certain types of ill health is now an accepted truth in modern medicine.

I am familiar with a case of a proud and successful business man who awoke one morning to find his credit attacked, his business in the hands of creditors and his pride crushed. He formerly enjoyed robust health and was vigorous and alert, but soon after his failure he lost flesh rapidly, became profoundly emaciated, sleepless, depressed, constipated and hateful to those with whom he came in contact. During the two succeeding years he was examined by no less than twenty physicians and as many diagnoses were offered. The condition finally was classified as malignancy of the pylorus after repeated gastric lavage. The exploratory incision proved negative and not until his relatives came to his assistance financially, did the apparent organic invalidism show any tendency of abatement. This patient has since been accepted in a class A insurance company.

The type of patient which concerns us tonight are those afflicted with what is termed psychoneurosis. They are on the whole constitutionally hypersensitive, restless and extremely susceptible to emotional upsets. So long as life runs along smoothly they are able to accomplish much and are usually up and doing. Many of them are the so-called "live wires" in the community. Some are leaders in important civic movements. Their greatest fault lies in the fact that they fail to appreciate their limitations and indulge in ambitions

which are seldom justified. It is therefore little wonder that they exhaust themselves mentally and fall a prey to the pangs of subjective nervousness.

Unfortunately they come to the physician with their attention tenaciously focussed upon certain bodily organs. Their rapid heart action and precordial oppression, the excessive perspiration, stomach distress, constipation and eructation of gas, the coated tongue, the fetid breath, the depraved appetite, the dryness of mouth and throat, the insomnia, the annoying sensations of the eyes, the peculiar feelings in the lower limbs, the vague and fleeting pains in the muscles and joints, the backaches and the psychic unrest are a few of the torments which harass them.

With such a clinical history it would be manifestly natural for the physician to assume that he was dealing with a classical intestinal toxæmia and he would be expected and justified to proceed to correct it in the ordinary manner even though no actual physical lesion was discernible. If the disorder was primarily a true toxæmia, and such conditions are of course quite common, his management of the case would more than likely result satisfactorily to both the patient and himself. But if on the contrary his efforts utterly failed and if after repeated examinations of the gastric functions and secretions by every modern procedure, he still is unable to elicit a single objective flaw, then it becomes his duty to proceed further and subject the neural and psychic status of the individual to a painstaking scrutiny.

Most of these introspective and preoccupied patients when they first come under observation are deeply discouraged and pessimistic. Every conceivable cure has been tried and found wanting. It is not surprising, therefore, that they hesitate to enthuse over anything one may desire or plan to do for them. Like some of their medical advisers they are imbued with the fixed idea or obsession that some unaccountable, deep-seated disorder exists which is beyond repair.

When it has been determined that the problem is unmistakably psychological in origin it devolves upon the physician to at once gain an insight into the individual's emotional tone, to study his moods, passions and feelings, to ascertain his mode of living and habits, to rummage the personality in regard to his trend of thought and convictions, with the purpose in view of uprooting morbid mental processes which have caused his undoing and ill health.

For the time being it is well, I find, to forget his distressing complaints, which indeed are legion and which in most instances have been wrongly interpreted.

Usually it will be found that the patient for a long time has felt out of sorts and that a strange and unaccountable something, a feeling of incompleteness has crept over him from which he has been unable to escape. Psychoneurotics when pressed openly acknowledge having always suffered the sting which comes to the constitutionally hypersensitive; that they have been abnormally sympathetic and that the mere pin pricks and vicissitudes of life have been heavy burdens to carry. As you proceed with your analysis you will doubtless discover that a constant rebellion has been going on within them; that they are irritable, impatient and unreasonable, with little interest in the things that formerly attracted them. Worst of all, they are deeply self-centered and are busy night and day analyzing every sensation that comes to them. Many of them are secretive; will not discuss their condition with those who are near and dear to them, but on the contrary are prone to be annoyed and provoked if solicitation is expressed as to their welfare. Invariably they crave sympathy, which is oftentimes denied them because in many instances they appear robust and healthy. At night terrifying dreams greatly disturb them; their minds know no rest; relaxation seems impossible; amusements cease to please and they arise in the morning very much more fatigued than when they retire. Imaginations sour unrestricted and not infrequently they refer to the fact that thoughts come to them the like of which they cannot believe could come to any one. So tenaciously is their attention focussed upon self that it becomes an actual hardship to divert their thoughts to matters objective. For this reason it is difficult for them to follow the point in a conversation and to avoid embarrassment will when possible avoid meeting strangers.

In despair they take up a book and attempt to read it, only to discover that they must go back and start all over, not knowing what has been read. This, of course, is a common psychological fault and is due to the fixity of the attention upon matters subjective. The patient, however, is apt to consider this a sign of impending mental disaster or weakness of mind.

In some instances of psychoneurotic ill health we find the chief complaint to consist of what is described as an unbearable pressure on the top of the head and contraction of the muscles of the nape of

the neck. It seems to drive those affected almost to the point of distraction and they can barely restrain themselves. For my part, I know of no suffering to which mankind is heir that can be compared to it. It usually attacks those who have suffered long from worry and grief and abnormally sensitive, overly-sympathetic women who are approaching the menopause, and especially those who have carried their burdens, hardships and heartaches single-handed. For a long time they make the fight alone and only when they become exhausted and sleepless do they fall into the hands of the neurologist. Conditions of this nature are frequently encountered in homes where domestic infelicity and other disturbances prevail. As a rule the trouble gradually responds to systematic medico-psychological therapy.

In studying the personalities of those who may be classified as psychoneurotics most if not all of them will be found to be exceedingly susceptible to auto suggestion and other impressions. It is therefore not surprising that many of them fall a prey to all manner of quackery and other non-medical agencies. A full page illustrated medical advertisement will actually haunt them for weeks. Everything they see or hear about, is woven into their very beings and they never rest until it has been tried. I often tell them if they would apply to material interests one-half of the attention they bestow upon self what a howling success would be theirs. Items appearing in the newspapers relating to personal injuries, sudden deaths, suicides and other morbid incidents is apt to drive terror to their very souls.

Eventually these patients lose their grasp and control and become panic-stricken. They have crystallized their fears, suspicions and misgivings into nerve pains which finally exhaust them and they can fight no longer. The fear of insanity, the fear of death, the fear of being left alone, the fear of poverty, the fear of contracting a serious disease, the fear of crowds, the fear of meeting people, the fear of open places and innumerable other phobias and obsessions complete the picture.

Now, if any physician presumes for a single moment that nervously out-of-tune people will voluntarily give vent to their innermost sufferings, a few of which I have enumerated, he will find himself very much deceived. On the contrary, these patients are loath to divulge their secret misgivings and fears because they have already reached the conclusion that they are symptomatic of

some serious physical or mental malady. They will frankly elaborate in the minutest detail their many bodily complaints, most of which are purely subjective, but they are mystified by the strange feelings, sensations and emotional uprisings which keeps them in a state of strife with self and will persist in holding them as secrets inviolate. Some actually postpone the consulting of a physician for fear that an examination will disclose an incurable affliction.

If you are able to break into their personalities, so to speak, and view the mental functions as you would the working of an automobile engine and finally drag out or bring to the surface a disturbing psychic complex which is capable of being reacted upon, it will not be long until you see all the distress subsiding and a new personality substituted for the old.

Take for example the successful business man whose labor is largely intellectual. Expose him to the health-wrecking strain of profound worry and grief. In a very short time you will find him chasing from one physician to another seeking an explanation for the peculiar sensations about his heart, its accelerated action and precordial oppression, his obscure pains, the gastric distress, coated tongue, constipation, haggard expression, irritability, lack of sociability, introspective alertness and lack of interest in current affairs. All day long this man is living in a world all his own, constructed by the impressions gleaned from self-analysis and personal alarm. One physician informs him of his need for a rest, another sends him to a hospital for gastric lavage, another places him on a restricted diet, another urges an X-ray study of the condition, another suggests a blood count, a Wassermann reaction and a lumbar puncture.

During all this time sufficient suggestions and conflicting opinions have fallen upon an overly impressionable mind to complicate the picture of invalidism which he had previously painted.

Now, there is no doubt that his distressing symptoms might have been relieved if he had come under the care of a painstaking physician who diligently sought for a rational etiology of his disorder, considering not only the physical signs of disease, but also the psychical factor. But if the physician, not having discovered any objective signs, simply attempts to alleviate such symptoms as appear, his treatment must be branded as empirical.

There is, to be sure, enough disease in the world of a truly organic nature and it is also true that in the incipency of many structural diseases the symptoms are obscure and perplexing. I

readily admit all this, but I do contend that we should give more attention to the study of the psychic sphere in order that we may look at the individual not from one side but to be able to know him physically, psychically, morally and socially.

As I intimated a moment ago, the psychoneuropath is inherently susceptible to ill-health in consequence of his attenuated emotionalism. But in the first place what is emotion? An emotion is the tone of feeling which attaches to a percept or idea. Every mental process, every thought, every judgment, every recognition and every discrimination has its emotional element. In the study of the emotions, kinaesthesia represents as it were the soil in which they germinate. It is the kinaesthetic sense that regulates the sensibility of the personality, which is one of the chief factors of emotivity. Mean contends that every stimulus that operates upon us modifies the Ego in the sense of pleasure or pain according as it furnishes elements that can be assimilated and are favorable to the existence of the psycho-organic unity, or elements which tend to its disintegration and are hurtful to it. In ordinary terms pain may be interpreted as an interference with the process of nutrition and pleasure as an elevated power of nutrition in the organ. In a general way emotion is the reaction of the personality. It is termed sthenic when it intensifies the tone of the personality. It is called asthenic when, on the other hand, the stimulation arrests, reduces or depresses the action of the personality. Kant declared that sthenic emotions tend to destroy the nervous mechanism; the sthenic kill by apoplexy; the asthenic by laming the heart.

External stimuli-emotional shocks, so-called, are not necessarily limited to the great shocks of life, *i. e.*, sudden death of loved ones, unexpected financial ruin, fright, and the like, but include those countless perturbations which though usually slight in themselves are capable of precipitating considerable reaction. Dejerine refers to two phenomena of life. Those which are regulated, foreseen and expected, to which one is adequate and for which one's life is adapted, and those one does not expect, which surprise, astonish and jar one. The former never produce emotional uprisings, while the latter are always liable to provoke them. It is therefore not a question of stimulus but the circumstances under which the emotional response is exercised which comes into play with all its variations.

The internal emotions also play perhaps a more important role

than those which are termed external. From all parts of the physical economy, even the least important and the most distant, there is a constant flow of nerve waves establishing relations between the organs and the superior nerve centers. To these are united the innumerable sensations arising from our manifold experiences each day. Furthermore, the brain is kept fully posted as to the condition of all bodily functions and no discordant note can arise without the mind being cognizant of it. It is this faculty which urges one on to greater activity when his emotional tone is exalted and it is this same faculty which when invaded by painful memories, depresses and makes one anxious about his health even though there is no real disease within him.

Emotions give color to moods, passions, affections and sentiments and they also explain why one feels particularly high-spirited on certain days and exceedingly low-spirited on others. In the midst of frivolity, when an individual should be especially happy and care-free, a single fleeting thought in which strong feeling has become associated may instantly invoke a state of sadness and despair. Then, again, intense emotional shock may completely overthrow the physical and mental equipoise of the person who experiences it. Thus anger, rage, sudden fright, thwarted affections, failure in business, disappointments, bitter grief and other kindred perturbations "take men off their guard" and seriously disturb their conscious control. Can anyone imagine an outburst of rage and picture no ebullition of the chest, no paling or flushing of the face, no dilation of the nostrils, no clenching of the teeth, no impulse to vigorous action, but in their stead limp muscles, quiet breathing, a placid visage and a peaceful frame of mind? Furthermore, what sort of an emotion of fear would be left if the feeling neither of accelerated heart action, nor of shallow breathing, neither of trembling lips nor of shaky limbs, neither of goose flesh nor of visceral stirrings were present, it is impossible for me to conceive. That care and worry disturb nutrition, that pain and sorrow cause tears to flow, that fear, fright and anger act upon the abdominal viscera, that shame and remorse influence the circulatory system has long been recognized.

In the experimental field some very interesting facts have been revealed. In 1884, Wagner studied the effect of fear upon the heart of a rabbit. A sudden blow on the table near the animal was

found to cause the heart to stand still a short time and then resume beating with increased frequency of stroke.

In late years Fere and Tarchanoff independently discovered by connecting a delicate galvanometer to two points of the skin and then subjecting the person under observation to stimuli which influenced the state of feeling, that an electric current or change of potential resulted. Mental activity of a non-affective sort provoked comparatively no reaction.

Shepard in a most painstaking study has demonstrated that all moderate nervous activity tends to constrict the peripheral vessels and to increase the volume and size of the pulse in the brain. All moderate nervous activity likewise increased the heart rate. Strong stimuli, such as arouse fear, fright and the like, induce a more complex circulatory reaction beginning in the brain with an increase in volume, passing thence to a decrease and finally rising to a large increase which gradually subsided. The mechanism of these changes in the blood supplied to the brain is in his opinion probably to be sought in the vaso-motor control of the great abdominal veins.

It is, therefore, very evident that the emotions exercise a most forceful influence upon the functions of both mind and body. Indeed, it is quite generally conceded that there are in emotions many physical manifestations which while purely functional are susceptible of having many objective consequences. If intense or sufficiently prolonged they are certainly capable of acting on the organism not unlike an infection or intoxication. It is not merely a figure of rhetoric when it is remarked that a certain person died of "grief." He would be a poor observer who has not seen persons who could not pull themselves together after experiencing profound psychic shock. Not that emotion acted directly but indirectly by lowering the physical resistance and preparing the soil for development of real disease.

Exophthalmic goitre under certain circumstances appears to be the immediate expression of strong emotion. In the predisposed, emotion may be the occasion of the first attack of angina pectoris, of a cerebral hemorrhage or of sudden death from heart disease in a subject already pathologically damaged. It was Sherington, I think, who stated that, "Of points where physiology and psychology touch, the place of one is at emotion."

The psychoneurotic's chief shortcoming is the fact that disagreeable impressions once experienced are constantly being re-

called to memory accompanied by the physical reactions which originally formed a part of them. Such individuals are apparently powerless to defend themselves and every new sensation and uprising is studied with analytic expertness. Finally a state of hypochondriacal preoccupation is created which is the starting point of a whole series of functional disturbances—cardio-vascular, respiratory, gastric, intestinal, genital, cutaneous and neuro-muscular. Furthermore, the impressionability of these patients is exceedingly pronounced. Unlike their more stable brother who is master of himself and is able to change his thoughts, convictions, actions and mental phenomena at will—the psychoneurotic is auto and hetero-suggestible and admits into his conscious sphere ideas and notions which are not always under the control of reason.

Mankind has always been subject to emotional insults and none have escaped their sting. The well balanced organization, however, knows how to externalize them, render them objective and transform them into conscious ideas. But even the individual who is fortified by a vigorous body and mind will not be able to resist indefinitely mental assaults if they are hurled at him too often and with great force, for some day he will lose his feeling of security and surrender. Such experiences are not uncommon in those who have suffered the innumerable nerve-racking wounds which repeated failures, loss of loved ones, a home broken up, blasted hopes, etc., inflict. Some it is true, blessed by an unusual heritage of resistive force, have manfully and unflinchingly faced shock after shock, blow after blow, sorrow after sorrow, heartache after heartache—an actual fusillade of mental wounds—and have emerged with their intellectual functions scarred but intact. Their number, however, is few.

On the other hand, I have known people who, after an acute illness, become painfully emotional and preserve the mentality of invalidism. They, seemingly, left their native energy, their self-mastery, their physical, mental and moral aptitudes behind in their illness because they encouraged the habit of self analysis, lost confidence in their strength and became controlled by the obsession that all efforts were useless and unavailing. In this connection it may well be said that those who scrutinize and study themselves physically and mentally will engender by those very means every preoccupation of a physical nature and every moral scruple which

otherwise would have been nothing more than a mere incident in their lives.

It is, therefore, the individual's make-up which characterizes his emotionalism. Some accept grief and trouble in a perfectly normal manner; others permit it to assume morbid proportions which is dangerous to mental health. Each person reacts to emotion in a way which is peculiarly his own by virtue of his temperament. The sanguine and choleric, for example, are inherently optimistic and the perplexities of life do not usually weigh heavily upon them. The phlegmatic and melancholic, on the contrary, magnify and exaggerate every disagreeable impression and are incessantly struggling against vicissitudes and internal strife. All external phenomena become factors of emotion for them because they lead an almost exclusive, introspective existence without any especial religious, moral, philosophical or practical interest to support them. Experience amply shows that when a nervously unstable individual loses the ideal or hobby which has guided or upheld him, if the end toward which he is working is withdrawn or becomes intangible he is thrown upon his own feeble resources and may be likened to a ship at sea without a rudder, drifting about at the mercy of the waves, to finally flounder on the treacherous shoals of emotionalism.

The Rose Building.

Salicylate Albuminuria.—R. W. Scott and P. J. Hanzlik, Cleveland (*Journal A. M. A.*, Dec. 30, 1916), report their investigations on the excretion of albumin from the use of salicylates. Following the administration of full therapeutic doses of sodium salicylate, albumin was found in the urine of both rheumatic and normal individuals, together with leukocytes and bodies resembling small granular casts. The albuminuria is greatest at "toxicity" (ringing in ears and deafness, vomiting, etc.), then gradually diminishes and finally disappears, a trace of albumin remaining in patients who showed a trace before the salicylate was given. The phenosulphonephthalein excretion and nonprotein nitrogen of the blood at different periods during an experiment show no decisive differences. The water excretion in "toxicity" is diminished, and this can be explained by the marked sweating which occurs. The albuminuria is not of febrile origin, because it was promptly produced in a febrile organism. Observations on animals with doses of salicylate corresponding to those used on human subjects caused prompt and severe albuminuria with white and red blood corpuscles in the urine. Morphologically, the kidneys showed distinct cloudy swelling, affecting particularly the proximal convoluted tubules, associated with the appearance of granular albuminous precipitate in the subcapsular space of the maphigian body.

CONSERVATIVE SURGERY IN SPLENOMEGALY

By ARNOLD PESKIND, M. D., Cleveland

Much is being said and written about splenomegaly, and splenectomy is finding favor with leaders in the surgical world. I am convinced, however, that a simple and safe method, described below, would, in the majority of cases of splenomegaly, bring about equally as good results, as far as the patient's future health is concerned, as splenectomy, avoiding at the same time the mortality which follows this major operation. I refer to a method which I have practiced for many years with unfailing effect of shrinking the abnormal size of the spleen and restoring in a great measure the normal composition of the cellular elements of the blood. This method can be briefly designated, "The seton method of reducing splenomegaly."

It is a simple operation and is performed as follows: An incision about one and a half inches in length is made through the skin and fascia several inches to the left of the middle line on a level with the umbilicus or at the most bulging part of the spleen. The muscles are then separated and retracted, the peritoneum is carefully divided for about three centimeters and caught with forceps. A very fine, full curved, round needle with fine thread is passed through the peritoneum and very gently drawn through the capsule of the spleen and brought out again through the peritoneum. The threads are not ligated until all sutures are delivered through the peritoneum and the splenic capsule. The least tension would tear the extremely friable capsule of the spleen. Five or six such sutures isolate an area of about one inch of the splenic capsule from the general abdominal cavity. In the first operations a small puncture was made in the center of the capsule of the spleen and the full length of a radium tube about one inch long was sunk into the splenic pulp and held to the surface by a metal wire which prevented the tube from slipping further into the spleen. The radium tube was left within the spleen for about twenty-four hours, when it was removed. In the last two cases I have discarded the use of the radium tube for a simple seton of formic-iodized gauze. The gauze is about one and one-half centimeters in diameter and is long enough to be inserted into the splenic pulp and to be brought out through the wound to the surface of the divided skin.

The following cases will illustrate the results of this method of treatment of splenomegaly: About ten years ago I was called in consultation to see a woman who was suspected to be suffering with

tuberculosis. She was thirty-three years of age, and previously to her last sickness was in good health. When I saw her she had been confined to bed for several months, was generally oedematous and very pale, almost blanched. She suffered from hemoptysis, epistaxis, hematemesis, metrorrhagia and her whole body, especially the lower extremities, was covered with petechiae. The blood count showed a marked leucocytosis with less than three million red cells and 35 per cent hemoglobin. As the spleen was unusually enlarged for a tuberculosis patient, I suggested that this organ was the probable chief factor in the blood destruction in this case. Upon my advice she was removed to St. Alexis Hospital, where I made the first attempt in the use of radium as the means of carrying out a new method of treatment in splenomegaly. The patient was taken to the operating room and under local anesthesia an incision was made a little to the left of the center of the enlarged mass of the spleen. The radium tube was left within the spleen for about twenty-four hours when it was removed. The spleen had perceptibly diminished in size in the twenty-four hours. The patient's general condition seemed somewhat improved. In a week her temperature was normal, all bleeding stopped, petechiae soon after disappeared and in about six weeks the patient left the hospital, having gained more than 25 per cent hemoglobin and all signs of oedema having disappeared. The spleen remained only a little larger than the normal in size. For over a year and a half after this operation the patient enjoyed excellent health; then an attack of acute pneumonia developed, the tuberculous trouble soon became general, and close to the end of the third year after the operation she died from tuberculosis. The spleen did not enlarge with the acute exacerbation of the disease. No post mortem was obtained.

Two more cases were similarly treated soon after this with the same result as far as reducing the spleen and the improvement of the cell contents of the blood is concerned. But, as these patients were only under my care for a very short time and were soon lost sight of, I shall not dwell on them longer.

In August, 1909, a girl of 15 years of age came to consult me from New Washington, about 80 miles from this city. Her parents were told that the patient had splenic anemia and that there was not much that could be done for their child. The girl was very pale, puffy, short of breath and had been ailing for some time. There was no doubt in the correctness of the diagnosis. August

13, 1909, the girl was taken to the operating room in St. Alexis Hospital and the operation was performed under local anesthesia with the use of the radium tube. In one week the spleen, which extended before the operation to the right of the umbilicus and was within the brim of the pelvis, had receded to about three fingers' breadth to the left of the umbilicus and on a level with the ribs. In two weeks the girl left for her home city much improved. At the moment of writing, this patient, now a young woman in her twenty-third year of age, is at the East 55th Street Hospital under my care for an ulcer of the left leg, which she ascribes to an injury sustained some time ago. Her blood count shows nine million leucocytes, three million nine hundred thousand erythrocytes and over seventy-five per cent of hemoglobin. Not a little of the present slight anemia is probably due to the ulcer of the leg and to confinement in her room. The spleen is only a little larger than normal. Her general appearance is that of fairly good health. The ulcer on the leg is healing rapidly.

Four more cases were operated since then. The history of the last case is hereby given in full. I was called in consultation on September 12th by Dr. Scully to see Mr. M. suffering with severe anasarca. The patient, sixty-three year of age, a railroad engineer by profession, had an infectious rhinitis of several years standing also very badly neglected teeth. Alcohol and lues were both positively excluded. There were no cardiac, pulmonary, renal nor hepatic disturbances to account for the severe dropsy of several months standing and, as I was told, Doctor Scully, the physician in the case, together with Doctors Follansbee, C. F. Hoover and F. S. Clark, who saw Mr. M. in consultation sometime before I did, have ascribed the severe anasarca to the splenic anemia. The man, when I saw him, surely was in a pitiful state; his legs, scrotum, abdomen, chest, forearms and face were oedematous, especially his abdomen, the walls of which, more so on the left side, felt as if they were pads of thick doughy clay. Nothing could be palpated through that oedematous mass. A mixture containing sulphate of iron, sulphuric acid and sulphate of magnesium was suggested to replace all cardiac and evacuant drugs which had so far been given with absolutely negative effects. This mixture has served well in several other bad cases. The man began to improve a little, and September 20th he was admitted to the East 55th Street Hospital and was placed under our care. The same medicaments

were continued. Within a month the dropsy had greatly subsided and was only noticeable on the legs a little above the ankles. The abdomen, which could not be examined when I first saw the patient, was, after the disappearance of the ascites, thoroughly investigated. The liver was found to be very little enlarged, no nodosities or other glandular enlargements could be felt. The spleen, as it had been diagnosed before my seeing Mr. M., was much enlarged, extended several fingers' breadth to the right of the umbilicus and from high up in the left hypochondrium down along the lumbar region, which was bulging, to dip into, below the brim of the pelvis. November 4th, Mr. M. was placed on the operating table, and with local anaesthesia, an incision was made a little more than ten centimeters to the left of the umbilicus and about seven centimeters below the ribs. The skin and fascia were divided, muscle fibres retracted and peritoneum exposed, divided and held by clamps. In spite of the greatest care and gentleness the splenic capsule was too friable to support even the slightest tension of a thread, so a small puncture was made and a seton of bismuth-formic-iodized gauze as described above was pushed forcibly into the splenic pulp. The gauze was brought out to the surface, another piece of sterile gauze was laid over it and adhesive plaster was drawn tightly over the latter. The patient was put to bed. There was a slight hemorrhage which soaked through the seton, the first ever experienced, but it was not of any proportion to demand special attention. The shrinking of the spleen was decidedly noticeable the next day when the outer dressing was removed. On the fourth day the seton was removed entirely. The spleen had then so far receded so that the place where the gauze was inserted now marked the outside of the right edge of the spleen, its right border having receded to the left more than ten centimeters in four days. Today, at this writing, three weeks after the insertion of the seton, there is a tongue-like projection of splenic tissue near the left superior spine of the ilium, also a small tongue of inflammatory tissue which extends from the site of the incision for over an inch towards the left where it joins the contracting spleen as it is receding towards the lumbar region and towards the left hypochondrium. There were at no time any ill effects from the operation beyond the discomforts of confinement in bed for nearly a week.

The last blood examination a couple of days before the operation showed: Leucocytes, thirty-nine thousand six hundred and

seventy-five; erythrocytes, four million five hundred and fifty thousand; hemoglobin, fifty-two per cent.

November 11th, the blood count gives: Leucocytes, thirty-seven thousand six hundred; erythrocytes, four million five hundred and fifty thousand; hemoglobin, sixty-five per cent. November 23, leucocytes and erythrocytes as in the last examination, but hemoglobin increased to seventy per cent. December 19, the day before leaving the hospital a blood examination was again made: Leucocytes, thirty-five thousand six hundred and fifty (still very high); erythrocytes, four million; hemoglobin, seventy-five per cent.

By curious coincidence the results of this operation in the case of the young woman from New Washington, who was operated over seven years ago, as mentioned above and who is at the East 55th Street Hospital, could well be compared with the results of the one last described. Several physicians examined these two patients, among whom was Dr. C. A. Hamann, who suggested bringing them to the attention of the profession.¹

It would be entirely speculative even to suggest what possibly takes place within the spleen after the seton is introduced. This however seems certain: the results are not due to drainage nor to collateral circulation. When radium was used the exudations were entirely negligible and the wound closed in about four or five days. With the seton the drainage is, of course, more noticeable, but not in amount to suggest, in the remotest, the great activity which evolves within the spleen soon after the foreign body is introduced. Especially must be considered the destruction of numerous newly formed cells, the obliteration of large numbers of newly formed vascular ramifications, the rapid elimination of detritus and disintegrated tissue, and probably the accelerated activity of the lymphatics and the increased elimination of toxins—all potent factors. But, without the necessary aid of the microscope and other biological investigation, which were so far impossible, any suggestion about tissue change following the use of the seton would resolve itself into theorizing and speculating—privileges belonging to all men. But this much is certain that this operation which is absolutely safe and free from mortality offers strikingly favorable end results.

December 21, 1916.

2414 East 55th Street.

¹Note February 8th, 1917. I saw Mr. M. this morning for the first time since he left the hospital. He passed through an attack of pneumonia about a week ago, and suffers since from diarrhoea. His spleen is only one or two finger's breadth under the left hypochondrium.

PNEUMOLITHS AND REPORTS OF CASES

By L. E. BROWN, M. D., Akron, Ohio

In the discussion of this somewhat rare condition and the report of two cases seen by the writer, I wish to confess that I have consulted and quoted freely from the cases reported by other men and the meager amount of literature on this subject.

Whether pneumoliths, bronchololiths or lung-stones are a clinical entity or not, is a mooted question as yet, especially in view of the scant space allotted it in medical literature; yet from the active symptoms produced in some cases by the existence of a pneumolith, simulating, in mild cases, a foreign body on the one hand, and on the other, or more severe cases, pulmonary hemorrhage due to erosion of a bronchus or the lung tissue.

The etiology, or origin, of these concretions is quite difficult to determine, as they may have their origin: *first*, in the peribronchial glands; *second*, from organized tubercular nodules in the parenchyma of the lung tissue; *third*, from the organization of an infarct or an abscess; *fourth*, from an organized pleurisy; and *fifth*, by the sudden inspiration of particles of cork, bone, sponge or a small toy lodging in the bronchus and forming a nucleus for the deposit of calcareous matter and thereby a stone.

In the peribronchial glands we have a cessation of their normal function and a gradual deposit of lime salts with a final result of a completely calcified gland which will act as a foreign body and may ulcerate through the bronchus and be expelled as such. A healed or organized tubercular nodule in the parenchyma of the lung, an organized infarct or abscess or an old pleuritic process may undergo the process of gradual infiltration with the lime salts from the blood stream. This occurring as an end result of the slowing of the blood current and permitting these salts to fall out and attack the above-named tissues.

It appears that an old tubercular process and the peribronchial glands are the most frequent seat of this calcification process.

There is also occasionally met with, in contra-indication to circumscribed deposits, a generalized diffuse calcification of the lungs, which may accompany a general fibrosis of the lungs. A certain number of these cases have been observed in connection with osteomalacia. In many respects they resemble the lungs seen in anthracosis, but there is no evidence of an occupational origin.

At any rate, this latter condition of generalized calcification is not one which produces circumscribed deposits of calcareous material, such as this report presents.

Histologically, cross-sections of pneumoliths show the presence of bronchial epithelium, detritus, crystals and leucocytes.

Chemically they are found to contain the following:

Calcium phosphate	1.56
Calcium carbonate	0.39
Magnesium carbonate	0.05
Soluble fats	0.06
Cholesterin	0.66
Mucus	0.09
Undetermined substance	0.03
Oxide of Iron.....	0.09
Silica	0.03
Volatile substances	0.03

They may appear as single or multiple stones. When single they are of considerable size, while when multiple they are much smaller and vary in size from a pinhead to that of a bean or larger. In a great majority of cases of pneumoliths, they remain latent and are only found post-mortem, producing no marked symptoms during life; this is especially true of the larger stones, while the smaller ones produce symptoms ranging from a spasmodic bronchitis of varying intensity to the most alarming symptoms of orthorpnea, fetid spasmodic hemoptysis and even asphyxia and death.

The symptoms consist principally of those of an apparent or severe respiratory disturbance of some nature. They are a harassing cough, somewhat increased in the recumbent position, expectoration of some mucus, some localized pain in the chest accompanied by a sensation described "as if something wanted to come up all the time." In some cases there is a poor appetite with concomitant loss of weight and strength, no elevation of temperature or increase of pulse rate except during the paroxysm, at which time there may be some bloodstained mucus expectorated, while in some cases it may amount to a severe hemoptysis and occasionally quantities of pus.

These concretions may be present in the lung, producing ulcerations from which hemorrhages take place, or an abscess is formed

which is emptied of its pus by expectoration or still more rarely, gangrene of the lung tissues.

Any of these conditions may exist for a long time, being diagnosed as tuberculosis, chronic bronchitis, etc., the true diagnosis only being made after the expulsion of one of these concretions or post-mortems.

As a rule physical examination of the chest reveals very little other than a few mucous or sub-crepitant rales, which discovery is of very little diagnostic importance; while the X-ray will often assist very materially, it is exceedingly disappointing in many cases.

I believe the bronchoscope is the means that should be and will be called into use in the diagnosis of these conditions more often than it has been in the past.

I also believe that if many of these apparently obscure or mysterious cases, that for want of a better name are diagnosed as chronic bronchitis, were X-rayed and a bronchoscopic examination made, we would be able to demonstrate the presence of these concretions ante-mortem rather than post-mortem; and in some cases at least, relieve the patient and possibly prevent a more serious condition from developing.

The use of the latter means for diagnostic purposes will only come as a result of education of the general practitioner, to refer these obscure cases for a bronchoscopic examination and the more general use of the bronchoscope by the specialist.

The treatment of cases of pneumolithiasis is purely symptomatic, no definite form of treatment availing much.

Case One:

Mr. S.—white—age fifty—born in Indiana—family history negative—occupation railway fireman and engineer for fifteen to twenty years, had always enjoyed apparently good health; had the usual diseases of childhood but no serious illness of any character until last illness, which lasted some six or eight weeks.

He had a disagreeable, harassing cough for several months, possibly as much as two years (diagnosis at various times as chronic bronchitis), expectorated considerable mucus; with paroxysms of rapid breathing simulating an asthmatic attack. Diagnosis of last illness, nephritis complicated by pulmonary tuberculosis. The post-mortem showed an interstitial nephritis, with the

presence of a pneumolith of dark color about the size of a hen's egg, this accounting for all of the pulmonary disturbance that had occurred in this case.

Case Two:

Mr. J. H.—age thirty-two—married—born at Doylestown, Ohio. Father died of asthma—mother died of cerebral hemorrhage. Has six brothers living; one brother died of asthma; three sisters living and one dead; does not know the cause; no history of tuberculosis to his knowledge; has worked alternately in coal mines and as a bartender most of the time.

Personal History—Had the usual diseases of childhood; has had gonorrhoea; had typhoid fever ten years ago and two years later had pneumonia.

The present trouble began in April, 1915; the attack usually begins by the patient feeling drowsy or sleepy for about two weeks, during which time he begins to cough, having paroxysms of coughing which are very much increased while in the recumbent position, also increasing in severity after a few days until he has a very severe attack, at which time the pneumolith is expelled, after which he is practically free from a cough and is entirely relieved and feels as though nothing has occurred.

During this prodromal period of two weeks, he expectorates quantities of mucus, some of it stained with blood; never complains of any pain, only a soreness following expulsion of the calculus; there is no rise of temperature, some slight acceleration of the pulse during the paroxysm, and some of the paroxysms are more severe than others, producing a spasm of the larynx with the feeling of suffocation, with considerable cyanosis and lowered pulse rate.

In this last attack, which was a severe one, he nearly went into a state of collapse, became very cyanotic, pulse weak and thready; he could feel the calculus in the throat but was unable to expel it.

His cough finally ceased somewhat and the general condition improved after stimulation, and when able to talk he said he could feel the stones receding in the trachea. This attack was in September, 1916.

This patient has had six attacks, after expelling five calculi—three of which we have saved for presentation.

In conclusion I wish to reiterate for the sake of emphasizing a few of the main points pertaining to pneumoliths.

First—Their origin may be from any of the following five sources: the peribronchial glands; an organized infarct or abscess; an organized pleurisy or inspiration of a foreign body such as cork, sponge, bone, etc.

Second—They may be single or multiple, large or small.

Third—In some cases they may remain quiescent, never causing any symptoms; while in others they are very active, producing symptoms ranging from a simple, constant cough to the most alarming symptoms of orthopnea, asphyxia and even death.

Fourth—The symptoms as outlined above with the X-ray findings, and above all if possible a bronchoscopic examination should permit of a diagnosis of pneumolithiasis before the expulsion of the calculus in many cases anti-mortem.

406 Everett Building.

Spinal Drainage Treatment.—L. B. Pilsbury, Lincoln, Neb. (*Jour. A. M. A.* Jan. 27, 1917), holds that, in spite of the extensive discussion on the subject in the literature, there is no essential difference or valid line of distinction between cerebral syphilis and paresis, or any essential difference in the spirochetes of the two conditions, though there is experimental evidence to support the view that the organism that attacks the brain is somewhat different from that which cripples the heart or assails the liver. There seems also to be no reason for making the distinction in treatment between paresis and cerebrospinal syphilis, and he takes up the query of Gilpin and Early whether it is not reasonable to think that reduced pressure within the cerebral spinal cavity might aid in securing the direct effects of drugs such as arsenic and mercury. On theoretical grounds it does not seem that the weekly removal of 20 or 40 c.c. should have more than a very transient effect in reducing pressure, and it seems probable that spontaneous variation may occur, though doubtless in less degree. The fluid is probably rapidly replaced and such rapidity may, it is conceivable, happen to carry over foreign substances circulating in the blood at the time. At any rate the method seems to be worth trying, and it was tried by him in ten cases of paresis, taboparesis and cerebrospinal syphilis. The amount of fluid withdrawn varied from 20 to 35 c.c. The Wassermann was performed with 1 c.c. of fluid and the cells counted in the Thoma-Zeiss chamber with the high power. The patients were not selected. Some of them would be a severe test for any form of treatment. On the whole, the results are not striking, and similar effects might reasonably be expected without spinal drainage. One of the patients is decidedly better, and several slightly so, but the one who improved had an alcoholic factor in his case. The cases are reported and the findings in the cerebrospinal fluid tabulated.

THE IMPORTANCE OF ENLARGED RECTAL VALVES IN CAUSING AUTO-TOXEMIA

By WILLIAM M. GREGORY, M.D., Berea, Ohio

In the pursuit of my specialty, which is the treatment of chronic diseases, I have found it necessary to watch very carefully for any and every cause of auto-toxemia, for I have found that about ninety per cent of cases of chronic disease are caused by toxins, where ten per cent are caused by germs. About the time of my entrance upon graduate medicine, some 21 years ago, Dr. Thomas Charles Martin, then of Cleveland, was doing a great deal to call the attention of the profession to the fact that hypertrophied rectal valves, and the resulting obstipation, fecal retention, and toxemia they caused, were the direct cause of many cases of neurasthenia and insanity. His statements were received, like every radical new idea, with a good deal of doubt, and some of the older men in the profession flatly refused to believe that the human body had any such organs as rectal valves. My own experience, in watching for them for the last 21 years, has been such as to prove to me beyond all doubt that enlarged rectal valves are a great deal more common than is generally supposed, and that while they may be only to blame for occasional cases of aggravated neurasthenia, or insanity, they are the direct cause of a vast number of cases of chronic disease and systemic poisoning. The cases of moderate enlargement and moderate obstipation are immensely more numerous than the aggravated ones, and they are exceedingly likely to remain undiscovered. My first experience with enlarged rectal valves was such as to make me a convert for life to Dr. Martin's ideas of their importance in causing disease. I was called to treat a woman who was represented as having a case of aggravated neurasthenia, but found that the case had progressed into one of complete insanity. The cause was evidently a bodily one, but what? I could find no ailment or cause of irritation to account for the condition. I put the patient to bed and put her on an exclusively milk diet for many weeks. Her physical condition improved, and she gained flesh rapidly, but not a bit of mental improvement did she make. After months of treatment which accomplished nothing, a very small circumstance revealed the cause of the whole trouble. Her sister and nurse told me one day that the sick girl had retained the water of a very large enema for six hours, and asked me how such a thing could happen. I told her that I did not know, but

would make it my particular business to find out at once. I made a higher rectal examination than I had ever made for any one before, and found what seemed at first an absolutely impervious wall across the rectum. She had a pair of the most enormously enlarged rectal valves ever possessed by a suffering human being, and they had kept the contents of the bowels dammed back for many hours, or days at a time. Having found the cause, it was a somewhat difficult matter to get it removed, as but very little of that very high rectal work had been done at that time, and very few surgeons were equipped for it. However, I soon ran across that medical and surgical giant, the late Dr. Tuckerman, and he made an exceedingly difficult but perfectly successful operation upon the enormous valves, and their evil work became a thing of the past. The patient made a slow recovery, and regained her mental health completely.

My next case of enlarged rectal valves, a middle-aged man, had occasional short attacks of acute insanity, only lasting a day or two, but he would not listen to operation, having been strongly advised against it at the sanitorium where the condition was discovered. He died very suddenly about two years after I first met him. Within the last few years I have discovered a number of cases of moderately enlarged valves, all in women past middle life. I have come to consider dull, constant pain, and bloating, low down in the left side in the region of the sigmoid flexures, as hints for a high examination of the rectum. Lucky is the woman in this condition who has a watchful and intelligent physician. Many a woman has been told by quacks that the "lump in the left side" was a tumor and made to believe that the quack's treatment had "caused it to be absorbed." These moderate cases of enlargement cause much obstipation, damming up of gas and fecal matter, constant dull pain, auto-toxemia, and ill-health. The best thing we can do for them is constant, persevering, insistence on the use of water, fountain syringe, and rectal tube. Many patients will think at first that they cannot possibly use a rectal tube, but you can get them all to use it by persistence. We should not make routine use of salines in these cases, but rather use the vegetable laxatives, such as the gastro-hepatic pills of podophyllin, leptandrin, hydrastis, aloin, capsicum, and gamboge.

A NEW TREATMENT FOR STATUS EPILEPTICUS

By WM. HELD, M. D., Chicago, Ill.

He, to whose lot it ever fell to attend a case of status epilepticus, will appreciate the feeling of misgiving which takes possession of the physician as he approaches such patient. The attack at first has the character of one of the many which that particular epileptic experienced in the past. The family of the patient extends the usual aid by protecting the epileptic from injury during convulsions, by relieving any constrictions due to tight clothing and by inserting a piece of rubber or wood, if possible, between the teeth to prevent biting of patient's tongue and such similar measures. Instead of the patient regaining consciousness shortly after cessation of the convulsion, as has been the case in previous attacks, the patient remains unconscious and soon relapses into another convulsive fit. This is a sad foreboding and the alarm soon appears justified as the condition progresses. One seizure follows another without the patient regaining consciousness during the intervals. After a period of time, varying with different patients, the sad demonstration of complete exhaustion and deep epileptic intoxication of brain centers is ended by death. This being, as is well known, the usual outcome of status, I have often called the family's attention to the serious nature of the condition and added that recovery from status is extremely rare, almost unknown. Where so much is to be gained and almost nothing to be lost, any reasonable method of treatment should be earnestly employed. Arguing that the remedy which has proved successful in the treatment of a few epileptic attacks might and should be of benefit in a series of seizures, I determined to put this reasoning to a practical test as soon as opportunity offered. Within one year I have used the treatment to be described in six cases of genuine status. Treatment and results obtained were as follows:

Hot application to patient's feet, cold to head. Plenty of fresh air was admitted by opening the windows, during which time care was taken to protect the patient from being chilled, the head only remaining exposed to the air. Any phlegm in patient's mouth was removed by the protected finger to prevent forcible inspiration of such during convulsions. A high rectal enema of two quarts of warm water was given. This also aided in voiding bladder contents, which sometimes was assisted by hot applications over bladder and kidneys. All treatment was carried out without regard to the

convulsive state, for which reason a handy assistant was essential. One arm was bared, constricted above elbow and from 10 to 20 c.c. of blood drawn into a glass syringe. The larger amount was withdrawn in those cases showing great congestion of head. Blood was placed in test tubes and chilled under running water or placed on ice when ice was at hand. It was then centrifuged at the bedside and 2 c.c. of the serum drawn off and placed in a sterile bottle. To this was added 2 c.c. of sterile physiological salt solution, the whole shaken thoroughly and 2 c.c. of the resultant solution poured out, thrown away. To the remaining 2 c.c. were again added 2 c.c. of the salt solution, shaken and again 2 c.c. poured out. This process was repeated until 15 times 2 c.c. of salt solution had been added and poured away. To the last 4 c.c., that is the 16th addition, were added 2 c.c. of anti-epileptic serum (dissimilar) obtained from any epileptic under treatment at the time.

After thoroughly shaking of this solution, five drops were withdrawn into a hypodermic syringe and intravenously injected. The result was that in four of the patients so treated the interval following the injection was not again succeeded by attack. The patient slept for some time and gradually regained consciousness, behaving as after ordinary attacks. Two out of the four patients experienced a delay in their regular attacks of five and five and one-half weeks, respectively, following the injection of the serum. This may have been due either to the influence of the anti-epileptic serum injected, or to autogenous anti-epileptic ferments developed in the system during the status. Two patients died without having demonstrated any difference in condition following the injections. In one of the fatal cases the anti-epileptic serum was not used, it not being on hand in time. My reason for employing this ferment (which is the same used by me in the treatment of all epileptics) is based upon the prompt response in the nature of reactive attacks, which epileptics have shown after such injections, thereby demonstrating the homogenous character between the injected and the disturbing elements present in the epileptic. In view of the fact that status is not very rare and mostly fatal, the suggested treatment (considering the results obtained) warrants its earnest consideration. The injections, being intravenous, require strict adherence to asepsis, the work preferably being done by one versed in specific serum therapy.

RECENT ADVANCES IN GYNECOLOGY AND OBSTETRICS

By WM. D. FULLERTON, M. D., Cleveland

Anoci-Association and Perineal Anesthesia in Labor

Some very interesting and suggestive work is presented by the authors of these original articles. It is indeed remarkable considering the enthusiasm with which anoci-association has been received, that at present when so much effort is being exerted to procure euphoria at the time of labor, more attention has not been devoted to its application during childbirth. Although other modes of anesthesia have been extensively tried for perineal work, but little has been written of the results of blocking the local tissues for gynecological work and little or nothing of this procedure has been applied to obstetrics.

Hoag (*Surg. Gyn. Obst.*, 1916, XXIII, 612), reports his experience with anoci-association as applied in delivery. The method consists briefly of giving nitrous-oxid-oxygen and at the same time infiltrating the area of operation with a local anesthetic—novocain, then, before closing, injecting a solution of quinine and urea which acts anesthetically for a period of a day or two after the temporary effects of the novocain have disappeared.

Anoci-association for surgical purposes has its opponents, the chief objection being their inability to secure good muscular relaxation. This will be found due to three principal factors; the incomplete blocking of the operative field with novocain; lack of gentleness by the operator in handling the tissues and inefficient nitrous-oxid-oxygen anesthetists. It is quite reasonable to expect the perineal muscles to behave similarly to muscles elsewhere in the body, so that the above-mentioned factors should be rigidly observed if the method is to be successfully applied to labor.

Since 1915, when Webster, Lynch and others stimulatingly advocated nitrous-oxid-oxygen for amnesia during labor, it has become steadily more extensively used and with a marked degree of success, the greatest and practically the only objection in trained hands, is the lack of sufficient relaxation of the perineum to permit of reasonably easy dilatation by the descending head. In the hands of most applicants it has been found necessary to add some ether vapor to the gas mixture or to switch to chloroform alone for the final dilatation and actual delivery.

Hoag used the nitrous-oxid-oxygen as an analgesic during the latter part of the first stage and throughout the second stage, deepening to complete anesthesia for actual delivery. Whenever discomfort or nervousness on part of the patient warranted it, $1/6$ grain of morphin and $1/200$ grain of scopolamin were given during the first stage, and not infrequently the latter was repeated, but in no case was sufficient scopolamin given to produce anything like "twilight sleep." So soon as the head became visible at the outlet the perineum was injected with 0.25 per cent novocain, the needle, a long and sharp one, being introduced at the muco-cutaneous junction and guided by one finger in the vagina. When used, a 1 per cent solution of quinine-urea was injected immediately afterwards. From 60 to 150 c.c. of novocain and 30 to 40 c.c. of quinine-urea were used, the total for both solutions never exceeding 175 c.c.

The cases were almost exclusively nullipara, and as the second stage averaged one hour and forty minutes, it was certainly not prolonged. Forceps were used three times in twenty cases, two low and one mid, the latter for foetal indications. Half of the cases had some degree of laceration, one-third of these being second degree tears, one each due to mid forceps, contracted outlet and unattended delivery of the head. There was some oedema and tenderness of the parts on the second and third days, but no abscess, slough or infiltration occurred and the repaired tissues healed without incident.

Hoag concludes that by injecting the perineum as described, relaxation is materially increased and that the procedure is without untoward effects.

King (*Surg. Gyn. Obst.*, 1916, XXIII, 615), lays emphasis on the ease of operation and good results following blocking the perineal nerve trunks for delivery. Attention is called to the fact that the most discomfort is experienced coincidentally with descent of the head and dilatation of the outlet. The stretching and rupture of Colles' fascia producing the greatest discomfort during labor.

Attention is called to the minute anatomy of the perineum, especially its fascia planes and nerve supply. The perineum, pear-shaped from below upward, is divided into an anterior and posterior triangle by a line joining the ischial tuberosities. The anterior triangle contains all the sensory nerve endings involved in child-birth, except in case of deep tears involving the anus. By blocking the pudic nerve in the ischio-rectal fossa, complete anesthesia is

obtained of the posterior triangle, but only a fair degree in the anterior because of its partial innervation by the inferior pudendal, genito-crural and ilio-inguinal fibers.

Novocain in normal saline was used for blocking, a 2 per cent solution for anterior, and a 1 per cent for posterior injections, to both was added 1/3 minim of 1:1000 solution of adrenalin chloride for each cubic centimeter of novocain.

After appropriate preparation, for injection of the anterior triangle the needle is entered 2 to 4 cm. above the lower margin of the vagina and 2 cm. medianward from the rami of the symphysis. After passing the needle 2 to 4 cm. deep, to the level of the hymen, sudden pain will indicate perforation of Colles' fascia, after which 1.5 c.c. of the anesthetic is injected.

For the posterior triangle, with the needle inclined laterally, it is introduced midway between anus and tuberosity of the ischium to a depth of 4 cm. and 5 to 10 c.c. of the 1 per cent solution are injected.

The injections are made bilaterally. Anesthesia results after a few minutes and persists for several hours. Primipara require only anterior injection whereas multipara frequently require both anterior and posterior.

No untoward results were noted in more than 100 injections. Tears were reduced in number and extent, due to the ability of the patient, being relieved of her pain, to control the rate of advance. Hemorrhage from tears was diminished by the adrenalin. Perineorrhaphies were easily done without pain or much hemorrhage.

422 Osborn Building.

Posture.—The work of the American Posture League, organized three years ago by a group of physicians and educators, is reported by H. L. Taylor, New York (*Journal A. M. A.*, Feb. 3, 1917). He gives the tests that have been used and the statistics of the various methods of standing, sitting, walking, etc. A large number of tracings have been made of the feet with special reference to properly adapted shoes and other committees have laid down principles and effected reforms in the making of ready-made garments. The furniture committee has studied the matter of seats, writing tables, etc. The scientific standardizing of wearing apparel, furniture and the various appliances used by the worker makes a special appeal to the orthopedic surgeon, but should also interest the practicing physician and the general public.

NEUROLOGICAL REVIEWS

By T. S. KEYSER, M. D., Cleveland

A Study of the Menopause with Special Reference to Its Vasomotor Disturbances. Dr. Carcy Culbertson, Surgery, Gynecology and Obstetrics. December, 1916.

The basis of the author's article consists of about two years' careful clinical experience and a rather thorough study of the literature on the phenomena of the climacteric.

The average age at which the menopause occurs is forty-seven years. It may occur without noticeable symptoms or be associated with constant or intermittent symptoms. Nervous disturbances, such as irritability, despondency, forgetfulness, sleeplessness, anxiety, mental unrest, and perversion of taste, are quite frequent. The vasomotor symptoms consist of fainting, vertigo, numbness, sweating, congestions, flushes, headache, cardiac palpitation, cold hands and feet, and tingling in the arms and legs. The disorders referred to the gastro-intestinal tract consist in nausea, flatulency and distention, weight and distress in the epigastrium, "heart-burn," constipation or at times diarrhoea, and capricious appetite. During the menopause the sexual response remains active and often exaggerated.

According to the statistics compiled by Tilt, the menstrual flow was gradually diminished in 26.84 per cent of 637 patients; it ceased by regular recurrence in 24.33 per cent, and it stopped abruptly in 14.76 per cent. Terminal metrorrhagia was present in 28.41 per cent of these patients. Kisch, in a series of five hundred cases, found metrorrhagia occurred in 286, only three of which were complicated by carcinoma and five by fibromyoma. Uterine displacement was present in 117 and chronic metritis in 79.

The duration of the menopause varies from six months to three years. Norris is inclined to regard a duration of over one year as pathological rather than physiological and believes such patients should be examined for some abnormality of the genital organs. The neuroses of the climacteric usually antedate the beginning of menstrual irregularity and continue for six to eighteen months after its cessation.

It is generally accepted that the ovary possesses an internal secretion, which is thrown off with the follicle and its secretion continued for a variable number of days after rupture by the cells

which go to make up the portion of the corpus luteum. Through the influence of this secretion the uterine mucosa is actuated into a condition of oedema for the reception of a fertilized ovum, or menstruation.

The ovarian hormone is also a factor in the general organic economy, acting in harmony with the other glands of internal secretion. It is believed that the withdrawal of the ovarian secretion at the climacteric leads to functional disarrangement of the endocrine glands, thus producing the various symptoms-complex. Thus we see cases resembling dysthyroidism, acromegaly, dystrophia adiposogenitalis, etc. Various authors believe that true psychoses are virtually never produced during the menopause. Bandler attributes the mental symptoms in large part to the hypersecretion or hyposecretion of the thyroid; the former giving rise to the excitable type, the latter to the depressed type.

The author has studied especially the vasomotor phenomena of the menopause. All but four of the patients showed a definite elevation of the blood pressure which is attributed to hyperfunction of the hypophysis and adrenals. The characteristic feature of the blood pressure consists in the fact that the diastolic pressure does not rise proportionately with the systolic pressure. In other words, there is definite increase in the pulse-pressure. The ovarian secretion is believed to have a neutralizing influence over the hypophysis and the adrenals and thus indirectly producing decrease in the arterial tension. It has been demonstrated repeatedly that the administration of corpus luteum leads to a reduction of the blood-pressure.

The author shows in charts of the blood-pressure that the systolic and diastolic pressures tend to come into normal relationship, when corpus luteum is administered. As the arterial tension approaches normal the vasomotor symptoms decrease in severity or disappear. When administering corpus luteum, the best criterion of the dosage is a frequent record of the blood-pressure.

422 Osborn Building.

Syphilis Should be a Reportable Disease.—The *Monthly Bulletin* of the Health Department of Boston, Mass., July, 1916, sums up clearly the arguments for regarding syphilis from the public health standpoint as other communicable diseases are regarded, and for providing for its diagnosis and treatment. "This disease should be fought from a health standpoint entirely, and with the same methods that are now in use for other infectious diseases. The status and environment of patients should not be considered. All infected persons should be amenable to the regulations made for the protection of the community."

THE PROGRESS IN PEDIATRICS

By HUBERT C. KING, M. D., Cleveland

Epidemic Vaginitis in Children. B. K. Rachford, M. D. *Am. Jour. Med. Scien.*, Vol. CLII, No. 539.

In discussing the duration of these cases Rachford states that in a report of the American Pediatric Society in 1915, 53 of 71 physicians consider the time varies from six weeks to six months. The disease commonly, if relapses are considered, continues for years. A large percentage of cases discharged as apparently cured are subject to relapse. When one considers how common the disease is in young girls and how rare in older girls, except as it is produced by sexual contact, one must conclude that the disease is, in the vast majority of cases, self-limited. As the child approaches puberty the disease tends to disappear.

Complications and sequelae are much less common than in gonococcus disease of the adult. In a large experience, arthritis was the only complication encountered by the author.

The treatment which has served Rachford best is irrigation of the infected parts once daily with two quarts of normal saline solution followed by the injection of 2 or 3 ounces of a 1 per cent solution of silver nitrate. It is his belief that the intractability of these cases is due to re-infection. To prevent this the vaginitis wards of the Cincinnati Hospital are divided into four compartments. In the first are placed new cases as they are admitted, and here they remain until Gram-negative diplococci can no longer be found in the smears from just within the vagina. They are transferred to the second compartment, where they remain for a week under treatment, and if the smear is still negative they are transferred to compartment three for another week of treatment and another culture. If this culture is negative the patient is transferred to compartment four, where they are kept for one week without treatment. If the culture is still negative at the end of this time, the patient is discharged. They are observed for several weeks outside the hospital to insure their convalescence. This arrangement has worked out well.

Rachford advises the use of the term epidemic vaginitis instead of gonorrheal or gonococcus vaginitis, terms which to the laity suggest venereal disease. If such a change were made the enforce-

ment of the health regulations which make it a reportable disease would be made easier.

Creolin in Scabies in the Infant. Douglas W. Montgomery. *Arch. Pediat.*, 1916, XXIII, 525.

Creolin is recommended as an effective innocuous parasiticide adaptable to the treatment of scabies in children. In the infant scabies tends to spread over the entire body and to be attended by eczema and pyogenic skin infection. Sulphur is probably the best remedy for scabies, but in children is often highly irritating to the sensitive skin. Sulphur sometimes leaves an irritation of the skin long after the scabetic condition has been cured. The following prescription of Dr. Werther of Dresden is given: R—Creolin, 10.00; sapo viridis, 30.00; adipis benzoati ad 100.00 M.—Sig.—Rub in once a day. The green soap adds to the penetrating qualities of the preparation, but is not necessary and may be irritating to the infant's skin.

Principles of Diagnosis and Treatment in Heart Affections. Sir James Mackenzie. *Oxford Medical Publications*, 1916.

This is without doubt one of the most remarkable medical books ever written. The experience of Dr. Mackenzie is enormous, his observation is keen and his advice sound. I take the liberty of quoting from his remarks on the heart in childhood.

"In children some difficulty may be experienced in getting out the facts, but, as a rule, I find it easy to appreciate the heart's efficiency when they are old enough to talk and run about. Unfortunately, there is a mistaken idea in the minds of parents and physicians that a suspicion of heart trouble demands that a child be kept at rest. No doubt, in rare instances of acute or progressive lesion, rest is necessary, and the need for it may be recognized by a physical examination. But a great number of children, who are supposed to have weak or impaired hearts and are able to run about, are often needlessly restricted, because of some physical sign—murmur or irregularity. While I shall deal with the phenomena in detail, I wish to say that you will find that children with a heart the efficiency of which is impaired will not injure it by over-exertion. Children are very sensitive to distress provoked by cardiac inefficiency and will themselves abstain without being told, and one can usually recognize the degree of efficiency by getting the child to state if he likes running about with a hoop or running upstairs. When

they tell you they like doing it and it gives rise to no distress, you may take it that, whatever the cause of the trouble, it has not impaired the heart's strength. I cannot recall a single instance where I could reasonably attribute heart-failure to a child's voluntary exertions. The same reasoning applies to the games of boys and girls; when they exert themselves and find pleasure in doing so, it may be taken for granted that no harm results."

Suspension Laryngoscopy.—R. C. Lynch, New Orleans (*Journal A. M. A.*, Jan. 27, 1917), says that suspension laryngoscopy is so new that professional opinion has hardly begun to swing in either direction. He is himself looking for a more simple instrument than the one he has been using and he cautions against depending on cheap appliances. One must use more power than the beginner often realizes and apply this in a perfectly safe way in every detail. The chief advantage of the method is in seeing the parts in their entirety through a wide open mouth and obtaining a view limited only by the boundaries of nature, with no parts of the instrument in the field and both hands free to work. The method is not intended for ordinary office examinations, nor to be used when one wishes merely to see the lingual tonsil or mouth of the esophagus, nor will it ever replace the use of the bronchoscope or the esophagoscope. In fact, it is not intended to replace the ordinary throat mirror or the various direct spatulas or the tubes. It has a distinct field of usefulness of its own, distinct from all other methods. If one has but a limited field or small clinical service with limited facilities the suspension method will not be a valuable addition. A large epithelioma at the base of the tongue or marked deformities making it impossible to open the mouth wide would contraindicate its use and also in cases in which thyrotomy or low tracheotomy have been done. In persons with long necks, if the larynx seems to drop lower into the chest cavity than the normal and the resulting scar from previous operation limits the free extension of the chin, he has found it impossible to see by suspension any more than the posterior aspects of the arytenoid cartilages. One has the privilege of selection of the subjects for this method and this should be exercised with discretion at all times.

Ascaris Lumbricoides.—J. M. Perret and H. T. Simon, New Orleans (*Journal A. M. A.*, Jan. 27, 1917), report a case of intestinal obstruction due to roundworms in a child aged 8. The condition is rare from this cause, and they give a review of a considerable number of reports of cases in the literature. Out of 112 patients with intestinal obstruction treated in the Charity Hospital at New Orleans during ten years, they have found but one case in which the roundworm was the etiologic factor. In the case here reported the condition was relieved by a purgative enema which brought away a mass of about forty roundworms coiled and twisted together, about the size of a child's closed fist. Most of such cases are diagnosed at necropsy or while on the operating table, and the case is somewhat unusual in the mode of its relief. As they say: "Although the most drastic purgatives may be of no avail, the enema may in a few cases cause the surgeon to lay aside the knife."

McIntire Prize.—Last year Dr. Charles McIntire resigned the secretaryship of the American Academy of Medicine after twenty-five years of faithful service. In appreciative commemoration the American Academy of Medicine decided to raise a fund, the income of which should be expended in accordance with Dr. McIntire's suggestions. As a consequence the Academy now announces two prize offers, the prizes to be awarded at the annual meetings for 1918 and 1921, respectively.

The subject for 1918 is "The Principles Governing the Physician's Compensation in the Various Forms of Social Insurance." The members of the Committee to decide the relative value of the essays awarding this prize are: Dr. John L. Heffron, Dean of the College of Medicine, Syracuse University; Dr. Reuben Peterson, Professor of Obstetrics and Diseases of Women, University of Michigan, and Dr. John Staige Davis, Professor of Pediatrics and Practice of Medicine, University of Virginia.

The subject for 1921 is "What Effect Has Child Labor on the Growth of the Body?" The members of the committee to award this prize are: Dr. Thomas S. Arbuthnot, Dean of the Medical School of the University of Pittsburgh; Dr. Winfield Scott Hall, Professor of Physiology, Northwestern University, and Dr. James C. Wilson, Emeritus Professor, Practice of Medicine and of Clinical Medicine, Jefferson Medical College.

The conditions of the contest are:

(1) The essays are to be typewritten and in English, and the contests are to be open to everyone.

(2) Essays must contain not less than 5,000 or more than 20,000 words, exclusive of tables. They must be original and not previously published.

(3) Essays must not be signed with the true name of the writer, but are to be identified by a *nom de plume* or distinctive device. All essays are to reach the Secretary of the Academy on or before January 1st of the years for which the prizes are offered and are to be accompanied by a sealed envelope marked on the outside with the fictitious name or device assumed by the writer and to contain his true name inside.

(4) Each competitor must furnish four copies of his competitive essay.

(5) The envelope containing the name of the author of the winning essay will be opened by Dr. McIntire, or in his absence by the presiding officer at the annual meeting and the name of the successful contestant announced by him.

(6) The price in 1918 for the best essay submitted according to these conditions will be \$100.00; that of 1921 will be \$250.00.

(7) In case there are several essays of especial merit, after awarding the prize to the best, special mention of the others will be made and both the prize essay and those receiving special mention are to become at once the property of the Academy, probably to be published in the *Journal of Sociologic Medicine*. Essays not receiving a prize or special mention will be returned to the authors on application.

(8) The American Academy of Medicine reserves the right to decline to give the prize if none of the essays are of sufficient value.

The present officers of the American Academy of Medicine are: George A. Hare, M. D., Fresno, Cal., President; J. E. Tuckerman, M. D., Cleveland, President-Elect; Charles McIntire, M. D., Easton, Pa., Treasurer, and Thomas Wray Grayson, M. D., 1101 Westinghouse Building, Pittsburgh, Pa., secretary.

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Short notes upon clinical experiences or reports of interesting cases will be welcomed by the editors.

Original articles are accepted for publication by this Journal only with the distinct understanding that they are contributed solely to this Journal and will not be published elsewhere as original.

EDITORIAL

Local Investigation of Proprietary Medicines

Widely advertised proprietary medicines and nostrums claiming to cure all diseases are to be investigated by the city bureau of laboratories the coming year. The proposed new sanitary code may also require manufacturers of proprietary products to file their formulas with the Division of Health.

The bureau proposes to educate the public to the fact that patent medicines will not make athletes out of weaklings, that one cannot become beautiful by swallowing a few pills or take on or reduce flesh by using Madam Somebody's lotion.

It will lay emphasis on the fact that patent medicines, spring tonics and liver pills are disappointing substitutes for medical advice, fresh air, pure food, exercise and right living.

The result of the bureau's analysis of several extensively advertised products was published in the last issue of "Your Health," the official publication of the Division of Health.

City Hospital Appointments

Appointments to the visiting staff of City Hospital have just been made by Director of Public Welfare Beman, from nominations by trustees of Western Reserve University. This is in accordance with an agreement entered into between the city and the university two years ago.

The new appointments are as follows:

Dr. C. A. Hamann, Chief of the Surgical Division.

Dr. E. P. Carter, Chief of the Medical Division.

Dr. H. A. Becker, Assistant Chief of the Surgical Division.

Dr. C. W. Stone, Assistant Chief of the Medical Division.

Surgical Division—Department of Surgery.

Dr. C. A. Hamann, Visiting Surgeon and Department Head.

Dr. H. A. Becker, Visiting Surgeon and Assistant Department Head.

Drs. O. T. Thomas, F. C. Herrick, C. H. Lenhart, C. A. Weber and E. P. Monaghan, Visiting Surgeons.

Diseases of the Eye.

Dr. C. C. Stewart, Visiting Ophthalmologist and Department Head.

Dr. S. S. Quittner, Visiting Ophthalmologist and Assistant Department Head.

Genito-Urinary Diseases

Dr. H. L. Sanford, Visiting Surgeon and Department Head.

Obstetric.

Dr. A. H. Bill, Visiting Obstetrician and Department Head.

Dr. J. J. Thomas, Visiting Obstetrician and Assistant Department Head.

Drs. G. B. Farnsworth and W. P. Miller, Visiting Obstetricians.

Medical Division.

Dr. E. P. Carter, Visiting Physician and Department Head.

Dr. Richard Dexter, Visiting Physician and Assistant Department Head.

Drs. S. J. Webster, F. J. Geib, Carlyle Pope, Visiting Physicians.

Dr. Clyde Cummer, Serologist.

Dermatology.

Dr. W. G. Gill, Visiting Dermatologist and Department Head.

Dr. H. N. Cole, Associate Visiting Dermatologist and Assistant Department Head.

Dr. S. Englander, Assistant Visiting Dermatologist.

Diseases of Children.

Dr. H. O. Ruh, Visiting Pediatricist and Department Head.

Dr. O. L. Goehle, Visiting Pediatricist and Assistant Department Head.

Dr. Fred Beekel, Visiting Pediatricist.

Contagious Diseases.

Dr. H. O. Ruh, Visiting Physician and Department Head.

Dr. O. H. Goehle, Visiting Physician and Assistant Department Head.

Dr. Fred Beekel, Visiting Physician.

Tuberculosis.

Dr. J. C. Placak, Visiting Physician and Department Head.

Dr. A. N. Dawson, Visiting Physician and Assistant Department Head.

Drs. E. P. Edwards and W. C. Greenwald, Visiting Physicians.

Pathology.

Dr. H. P. Karsner, Visiting Pathologist and Department Head.

Appointments to the Divisions of Ear, Nose and Throat and Nervous Diseases have not been made.

New Scoring System

Red, white and blue scoring cards will be used by the City Bureau of Laboratories this year in connection with its inspection of grocery stores, bakeshops, confectionery stores and restaurants. White cards will be given where sanitary conditions are found to be good. Blue cards will mean that the place has only scored between eighty and ninety points. Where bad conditions are found a red card will be given the proprietor and he will be notified that frequent visits will be made by the city inspectors until an improvement is made. Legislation requiring the posting of these cards is planned.

Hospital Will Not Open

Announcement has been made by Director of Public Welfare Beman that the new specific disease hospital in the City Hospital group on Scranton road will not be opened unless the State Legislature grants the city authority to borrow additional funds for operating expenses. Unless financial relief is obtained from the Legislature it is possible that part of the hospital now in operation will be forced to close down, according to the Director.

Draw Pavilion Plans

Plans for additional pavilions for the Warrensville tuberculosis sanitarium are being drawn by City Architect Betz. The City Council voted a bond issue of \$100,000 for enlarging the institution several months ago. Construction work is to start in the early spring.

State Cancer Society

One of the recent additions to health organizations is the State Society for the Control of Cancer. It is planned to conduct a state-wide educational campaign similar to the anti-tuberculosis campaign.

Annual Meeting

The annual meeting of the National Association for the Study and Prevention of Tuberculosis will be held in Cincinnati, May 9, 10 and 11.

To Enlarge Work

Dr. J. R. McDowell, Director of the Division of Tuberculosis, State Department of Health, has under consideration changes in the form and method of operation of the Ohio Public Health Exhibit. A more mobile form of exhibit for use in the smaller communities is sought. Practically all of the larger towns and cities have been visited by the present exhibit.

Community Health Demonstration

The Metropolitan Life Insurance Company has donated \$100,000 to the National Association for the Study and Prevention of Tuberculosis for a community health demonstration in Framingham, Mass. The demonstration will cover a period of three years and will seek to show that tuberculosis, as well as any other infectious disease, can be controlled. The work will be under the direction of Dr. Donald B. Armstrong and will start at once. Tuberculosis workers throughout the entire country will watch the work with great interest.

R. H. B., Jr.

DEPARTMENT OF THERAPEUTICS

Conducted by J. B. McGEE, M. D., Cleveland

Circulatory Failure: Malcolm Goodridge, in the January number of the *American Journal of the Medical Sciences*, presents the treatment of circulatory failure in acute infections. The importance of rest to the patient is perfectly obvious. In the management of any diseased condition modern therapeutic effort seeks to spare bodily function, and rest in acute infections means circulatory prophylaxis in the broadest sense. We find that tradition must play no part in dictating to our therapeutic judgment in the selection of various drugs by means of which we endeavor to combat the symptoms of circulatory failure when they have occurred, and he says this with a very full appreciation of the necessity for empiricism even in present-day treatment. The drugs which he chooses to discuss are: alcohol, strychnin, camphor, epinephrin, pituitary extract, the nitrites, and digitalis. As to alcohol, he states that today it is not considered to stimulate any portion of the cardiovascular system—indeed, there is much evidence that it does just the contrary. He is here speaking of alcohol purely from the standpoint of its effect on the circulation. He believes that it may do good in relieving active delirium, but it is of value here because of its depressant effect on the higher centers already over-stimulated by the toxemia of the disease, and not because it stimulates the circulation. Strychnin is another drug enjoying considerable reputation as a circulatory stimulant. MacKenzie says: "I have carefully sought for its special effect on the heart, and found none." He observes that with the weight of evidence against its value, we must admit that it is a very slender reed to tie to in serious circulatory failure. He thinks camphor has more to recommend it here than either alcohol or strychnin; he has used it as a stimulant in acute fevers with symptoms of circulatory failure, and has thought it did good. Epinephrin is fleeting in its action, and should not be prescribed when sustained effect on the circulation is desired. There is every evidence, experimental and clinical, to warrant the use of epinephrin in circulatory collapse occurring in such an acute infection as pneumonia. He insists upon the use of a fresh preparation. Pituitary extract of the infundibular portion is in action very similar to epinephrin and indications for its use are the same, and in addition it has a value in the treatment of tympanites, if present. The nitrites cause direct peripheral depression with a consequent fall of pressure. The vasometer centre is never depressed in animals by the use of nitrites. In fact, Pilcher and Sollmann proved that stimulation was the rule. Macht showed that the nitrites caused constriction on strips of the pulmonary artery. It is this selective action of the nitrite group which makes them valuable in some cases of pulmonary edema. Digitalis, and other members of this group of drugs, is according to some observers of little value in the treatment of circulatory failure occurring in the course of acute infectious diseases. Gunn, in his experimental work, showed that at least high fever is not the cause of failure of action of digitalis, and Sollmann, Mendenhall and Stingel agree in the main with Gunn, for they proved that in animals at least ouabain or crystalline strophanthin acts more quickly on the isolated rabbit's heart as the temperature of the animal is raised. His conclusions are:

1—There are neither clinical nor experimental evidence to support the belief that failure of the vasomotor center is the cause of the symptoms of circulatory failure which occur in acute infectious disease.

2—While it has been shown experimentally that the heart is not exhausted in animals dying of acute infectious diseases, there is no positive proof that the myocardium is wholly efficient in its effort to maintain the circulation in the body of the living animal under such circumstances.

3—The hypothesis which suggests the existence of a third center controlling the flow of blood is important, even though it is not yet proved.

4—Alcohol and strychnin are absolutely worthless drugs in the treatment of circulatory failure.

5—Epinephrin and pituitary extract are useful in treatment of sudden circulatory collapse, but their action is not a sustained one.

6—The nitrites are valuable additions to our therapeutic armamentarium in the treatment of pulmonary edema under certain circumstances, because of their selective action in constricting the pulmonary arteries.

7—Caffein increases the flow of blood when the supply to the heart is "inadequate," probably by an action on some mechanism outside of the heart.

8—One of the most important contributions on the action of digitalis is the proof electrocardiographically that it exerts precisely the same effect on the heart in febrile conditions that it exercises in non-febrile states, and whether the rhythm is initiated in the normal pacemaker or not.

Infantile Scurvy: In the *American Journal of Diseases of Children* for January, Alfred F. Hess contributes a study of the therapeutic value of yeast and of wheat embryo. Although we possess in orange juice a specific for infantile scurvy, it is well worth while to look about for other therapeutic agents which are potent in this disturbance. With this end in view, yeast was resorted to, and the instances in which it was given instead of orange juice, in infants six months old or under, in order to prevent occurrence of scorbutic symptoms, and the results may be summarized by the statement that hopes of the efficacy of this therapeutic agent proved to be unfounded, as the infants developed some signs of subacute or latent scurvy in spite of receiving the autolyzed yeast. The symptoms were not marked and were promptly counteracted by orange juice. Although yeast proved to possess little or no value as an antiscorbutic, it was found to be an excellent stimulant to growth. Following the addition of the yeast to the milk there was in many instances a prompt rise in the weight curve. It also had a favorable effect on the digestive processes, as shown not only by an increase of appetite, but by the digestive processes, as which in some instances became normal where previously constipated or poorly digested. Results with older infants were encouraging, as both the fluid and dried yeast caused a definite gain in weight. In view of the excellent results obtained by McCollum and his coworkers with the germ or embryo of wheat, a cereal containing the substance was added to the dietary of pasteurized milk and to observe whether it would act as a substitute for orange juice. The embryo or germ of wheat showed some value as an antiscorbutic, but not sufficient to be useful from a clinical or practical standpoint. In some cases of scurvy, while orange juice only partly succeeded, potato produced a rapid cure.

Dementia Praecox: Charles De M. Sajous, in the *Medical Record* for Jan. 13, states that over one-half the inmates of our asylums, to say nothing of the many not committed, suffer from dementia praecox or its complications. It stands first as the destroyer of the minds of the young. He recalls the importance of the thymus gland, which in the pathogenesis of general disease has been almost entirely neglected. The participation of the thymus in dementia praecox has been suggested to him by the fact, confirmed by many clinicians, that the size and condition of the thymus was an index to the state of nutrition of the body at large. While the thymus showed itself capable of supplying nucleins to the organ of the mind, dementia praecox also showed in many ways some connection with the thymus. There is the marked reduction of lymphocytes in this disease, which the therapeutic use of thymus gland corrects. Cudlum and Corson White obtained excellent results in three out of six cases of dementia praecox. The familiar functional relationship between the various ductless glands suggested that asthenic disorders of the latter should show some

mental kinship with dementia precox. The stigmata of thymus deficiency were briefly: (1) deficient development of the osseous system and of the epiphyses, and deformities suggesting rickets or osteomalacia, due to the inadequate assimilation of calcium owing to the deficiency of thymic nucleins which took part in the building up of calcium phosphate. (2) Deficient mental development due to insufficient production of thymic nucleins to supply the neurons of the central nervous system during its development. (3) A low relative leucocyte count, due to the inadequate formation of these cells by the thymus. The diseases of children are also important in the genesis of dementia precox.

Mercurialized Serum: In the *New York Medical Journal* for January 20,

F. E. Stewart presents a general consideration of mercurialized serums. These are prepared by adding corrosive sublimate to normal serums and dissolving the precipitates thus formed in an excess of serums. They may be prepared from the blood serum of the patient (auto-genous serum), from the blood serum of some other human being (homologous serum), or from the blood serum of some animal (heterologous serum). These preparations may be administered subcutaneously, intramuscularly, intravenously or intraspinally. Corrosive sublimate when injected subcutaneously is irritating; but when dissolved in normal serum loses its corrosive character, and the product formed is bland and nonirritating, and appears to be just as active as mercuric chloride itself. To Byrnes belongs the credit of introducing mercurialized serum in the treatment of cerebrospinal syphilis. So far as known no cases of anaphylaxis have followed its intraspinal injection. As the mercurialized serum when injected subcutaneously or intramuscularly produces characteristic effects in a very short period of time, it seems advisable to advocate its use either subcutaneously or intramuscularly as a method of choice, except when specially indicated intravenously. His conclusions are: (1) Corrosive sublimate becomes noncorrosive and nonirritating when dissolved in normal serum. (2) The compounds thus formed are just as toxic and probably therapeutically as efficacious as mercuric bichloride itself. (3) When prepared from heterologous serums, mercurialized serums must be regarded as heterologous serum preparations, requiring conformity to the same rules in administration as apply to other heterologous serums, as diphtheria antitoxin, and antibacterial serums. (4) Mercury in the form of mercurialized serums is an ideal form for administering mercury subcutaneously, intramuscularly, intravenously and intraspinally. (5) Subcutaneous or intramuscular administration is the method of choice. Intravenous or intraspinal administration should be the method of resort only when especially indicated, as outlined in the publications of Doctors Byrnes and Thompson, who have made a special study of the subject.

Cardiac Syphilis: In the January number of the *Therapeutic Gazette*,

Thomas E. Satterthwaite treats of cardiac syphilis. Hereditary as well as acquired lues may affect the heart. A diagnosis at the present day should be based upon a previous history of syphilis, often in a patient who has been treated by the regulation methods of former times, with mercurials and iodides, until no visible palpable or subjective signs of the disease have remained. In fact it may have lain dormant, ten, twenty or even thirty years. The most distinctive diagnostic signs are arteriosclerosis, a weak arrhythmic pulse, frequent or infrequent; dilated heart, angina, aortic dilatation or aneurism; valvular disease, usually aortic; finally the Wassermann or other luetic reaction. He quotes the conclusions of Brooks and Carroll, who studied three hundred cases: (1) Cases of heart involvement in early syphilis may be fully cured irrespective of the character of the lesion, by vigorous specific treatment alone and independent of circulatory measures. (2) Even well-established and late cases usually respond to treatment with cure or marked though perhaps temporary benefit. (3) In most tertiary instances, purely circulatory measures produce but

slight benefit unless preceded by or combined with specific medication. (4) Interrupted or inefficient treatment establishes an immunity or resistance on the part of the lesions against the specific drugs employed. Hence the importance of vigorous and carefully systematized treatment. (5) The most satisfactory treatment is one which combines the use of salvarsan with mercury and the iodides combined treatment may be unnecessary in early cases, but is essential in late ones. (6) Salvarsan, preferably old salvarsan, produces in most instances the quicker results. It is capable, however, of inducing serious symptoms, and in untried cases of heart involvement it should be administered in small doses until its action has been ascertained, particularly in those lesions characterized by disturbances of rhythm. (7) Mercury alone may produce apparent cure. Best effects are secured with this drug when its form is from time to time changed. Its use appears to be indispensable in all well-established cases. (8) The iodides are valuable adjuvants in the treatment of these cases, and especially in their late stages, but they are apparently without specific action. (9) Permanent injury to the heart must be assumed to have taken place in late cases, even though prompt response to treatment and apparent cure occurs.

Pneumonia: In the *Jurnal A. M. A.* for January 13, Rufus Cole considers serum treatment in pneumonia. His studies and experience have convinced him that little can be hoped from vaccines in an acute disease like pneumonia. Immune horse serums have now been prepared against the three important types of infecting organisms, I, II and III. The serum against pneumococci of Type I is of high power; that of Type II is considerably less powerful; while that of Type III has very little effect, either in the test-tube or in experimental animals. The use of immune serum against infections with Type I organism has given very gratifying results, and his experience indicates that with proper use this serum has great therapeutic value. In the hospital of the Rockefeller Institute, seventy-eight cases have now been treated with six deaths, a mortality of 8 per cent. It is evident, so far as may be judged from this number of cases, that the serum is of considerable value. In order to obtain the best results, certain rules must be observed. The serum must be given in large amounts. It must be given intravenously. Its administration must be commenced as early in the course of the disease as possible and its use must be continued until the infection has been definitely overcome. It is a mistake to give one dose of the serum, then wait until the disease has gained great headway, and then make another abortive attempt. Before administering the serum, a small dose of normal horse serum should be given subcutaneously in order to desensitize the patient in case he may be sensitive to horse serum. Clinical experience suggests that the serum has some antitoxic action, but methods for demonstrating this are at present unknown.

Pyorrhea Alveolaris.—The bacterial findings in the mouth and their relations to pyorrhea and intestinal gingivitis are discussed by A. W. Lescohier, Detroit (*Journal A. M. A.*, Feb. 10, 1917), who reviews some of the literature and says that his personal observations relative to the occurrence of streptococci, staphylococci and pneumococci in pyorrhea would place the streptococci first in frequency, and the staphylococcus next, the pneumococcus being observed in only a small per cent of cases. The tendency, he says, to consider any etiologic factor as an entity instead of its relations to other influences is unfortunate, as irritation and injuries and metabolic disturbances, may also play a part. The bacterial element is probably most important, however, in the destructive tissue changes, and certainly so in the serious sequels.

NEW AND NONOFFICIAL REMEDIES

Formin Tablets, 5 grains.—Each tablet contains 5 grains of formin (see New and Nonofficial Remedies, 1916, p. 138). Merck & Co., New York.

Formin Tablets, $7\frac{1}{2}$ grains.—Each tablet contains $7\frac{1}{2}$ grains of formin (see New and Nonofficial Remedies, 1916, p. 138). Merck & Co., New York.

Veronal Tablets, 5 grains.—Each tablet contains 5 grains of veronal (see New and Nonofficial Remedies, 1916, p. 92). Merck & Co., New York (*Jour. A. M. A.*, Jan. 6, 1917, p. 35).

Urease.—An enzyme found in certain beans, fungi and micro-organisms which, in the presence of water, converts urea into ammonium carbonate. It is used in the determination of urea in the urine, blood and other body fluids, either by determining the increase in alkalinity of the fluid to which it is added, or else the ammonia produced by it in the fluid is removed and estimated.

Urease—Squibb.—A standardized preparation of urease obtained from the jack bean. It is supplied in the form of powder and tablets containing 0.1 Gm. E. R. Squibb & Sons, New York.

Neutral Solution of Chlorinated Soda.—Solution Chlorinated Soda, Dakin.—Solution Chlorinated Soda, Carrel-Dakin.—A chlorinated soda solution, containing 0.43 to 0.48 per cent of available chlorine, free from caustic alkali. It is prepared by treating a suspension of chlorinated lime in water with definite amounts of sodium carbonate and sodium bicarbonate and adjusting the separated clear liquid to the required content of available chlorine. The solution is not reddened by phenolphthalein. It must be protected from light. The solution has been used for the irrigation of wounds, especially infected war wounds.

Theobromine—Merck.—A brand complying with the standards for theobromine, N. N. R. Merck & Co., New York.

Barium Sulphate, P. W. R., for X-ray Diagnosis.—A brand complying with the standards for barium sulphate for Roentgen-ray work, N. N. R. Powers-Weightman-Rosengarten Co., Philadelphia.

Barium Sulphate, Merck, for X-ray Diagnosis.—A brand complying with the standards for barium sulphate for Roentgen-ray work, N. N. R. Merck & Co., New York (*Jour. A. M. A.*, Jan. 13, 1917, p. 121).

Acetylsalicylic Acid.—Acidum acetylsalicylicum. Aspirin. The acetyl derivative of salicylic acid. Dosage: 0.3 to 1.0 Gm., repeated once in 3 hours until symptoms of salicylism are noted. It may be dispensed as powders (in wax paper), wafers or capsules.

Iocamfen.—A liquid obtained by the interaction of iodine 10 parts, phenol 20 parts, and camphor 70 parts, containing about 7.25 per cent free iodine. Iocamfen is said to have the antiseptic and germicidal properties of iodine and also the analgesic, stimulating and antiphlogistic properties of camphor and phenol. It is used in dressing wounds, etc. Iocamfen is also supplied as Iocamfen Ampules, containing 20 minims iocamfen. Schering & Glatz, New York (*Jour. A. M. A.*, Jan. 20, 1917, p. 199).

During January the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Nonofficial Remedies:

Merck & Company:

Barium Sulphate, Merck, for X-ray Diagnosis.

Theobromine, Merck.

Powers-Weightman-Rosengarten Co.:

Barium Sulphate, P. W. R., for X-ray Diagnosis.

Western Chemical Company:

Tabellae Dulces Aristochin (Western), 1 gr.

Tabellae Dulces Heroin (Western), 1/100 gr.

Tabellae Dulces Novaspirin (Western), $\frac{1}{4}$ gr.

Tabellae Dulces Tannalbin (Western), 1 gr.

Tabellae Dulces Terpin Hydrate with Heroin (Western), 1/100 gr.

The Academy of Medicine of Cleveland

ACADEMY MEETING

The one hundred and thirty-fifth regular meeting of the Academy of Medicine was held January 19, 1917,, at the Cleveland Medical Library, with the President, R. K. Updegraff, M. D., in the chair.

Program:

1. The Significance of Blood Platelets in Clinical Medicine, by Roger I. Lee, M. D., Boston, Mass.

Blood platelets are definite blood entities originating in bone marrow, and are found in the blood of all animals, but not in reptiles or birds. They can be demonstrated in vivo by examining the mesentery of a guinea pig. Normally they are disc-shaped, sometimes oblong, having near their center a darkly stained substance consisting of granules. Owing to the fact that mammals have both megacaryocytes and platelets, many observers believe that the platelets are fragments of the megacaryocytes.

Platelets may be counted in several ways. Blood smears made carefully will give a reasonably good estimate of the number of platelets. In order to insure good results, the technique must be carried out promptly and completely. The smears must be uniform, and coagulation must be avoided. Post vital staining with cresyl blue is much better, since their morphology can be studied more carefully. Enumeration of the platelets may be done in various ways. The average number in man is about 250,000.

Blood platelets represent the activity of one particular blood entity, the megacaryocyte. An increase in their number may be due to the increase of megacaryocytes or an abnormally early extrusion into the circulation. Benzol diminishes their number, whereas certain bacterial toxins increases it. Various infections modify the platelet count, *e. g.*, in tuberculosis, chronic infections, secondary anemias, an increased platelet count is the rule. Other conditions, such as splenectomy, exposure to high altitudes, or sunlight, tend to increase the platelet count.

The variation of the platelet count is of importance in studying the activity of the bone marrow in various diseases of the blood. Variation in the size of the platelets may be of some value, but not as valuable as the actual count. In myelogenous leukemia the platelets and megacaryocytes are increased. The enumeration of platelets in pernicious anemia gives us a good clue as to the condition and prognosis.

It has been shown that tissue juices and platelets may be used in the hastening of coagulation. Moreover, it is believed by some that the red blood corpuscles and leucocytes have nothing to do with the process of coagulation. Since the blood of birds contain no platelets, it can be preserved without clotting if it is drawn uncontaminated with tissue juices. If oxalated blood, which does not coagulate, is centrifuged, two layers form between which there is a whitish so-called "buffy layer." This buffy layer consists mostly of platelets. Boiling does not injure the activity of the platelets. Clotting will not withhold their activity, but they help to produce the clot retraction. A normal coagulation and normal clot retraction in one hour indicates a normal number of platelets.

Purpura hemorrhagica is a symptom complex occurring not infrequently under certain pathological conditions. When the platelet count is below 60,000, purpura is extremely likely to occur; when below 10,000 it will almost certainly follow. Retraction of the clot does not occur in purpura, nor is there a prolongation of the clotting time. The essential nature of purpura is unknown. It is sometimes present in typhoid fever, acute tuberculosis, in certain stages of pernicious anemia and benzol poisoning. In infectious and chemical purpuras, if the platelets are constantly diminished,

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the prognosis is bad unless platelets are supplied by transfusion. The transfusion should be rather large, about 600 cc.

Hemophylia is a pathological condition only of males, inherited only through females. There is an hereditary defect in the blood platelets, which renders them incapable to produce clotting. The platelets are normal in number, but slow in producing thrombin and clot retraction. The slow availability of the platelets delays the formation of thrombin and a delay in the formation of coagulation, but eventually the clot becomes quite firm. Hemophiliacs do not have purpura, nor do they bleed from small cuts or bruises. They usually bleed spontaneously into joints, from the kidneys, and following operations on mucus membranes, since in these areas the tissue juices are small in amount.

Calcium, gelatin and a few other substances usually warmly endorsed have no effect on the coagulation of hemophiliac blood. In the delayed clotting time of obstructive jaundice, hemorrhage of the new-born, the blood platelets are found to be normal in number. Platelets are very sticky substances and will adhere to any rough surface. They have something to do with the early formation of thrombi. The study of blood platelets should be a routine procedure in the study of most conditions. Hitherto the significance of blood platelets has not been sufficiently or adequately utilized.

2 Shall the Giving of Anesthetics by the Trained Nurse Be Legalized? by W. E. Lower.

It is a grave injustice to have to discuss the question of giving anesthetics, from a standpoint of "Personnel." This question has been brought up by various States. In Ohio the administration of an inhalation anesthetic by anyone except a licensed physician or dentist is a violation of the Medical Practice Act. Under the direction of the surgeon the nurse administers the anesthetic the same as a hypodermic of morphia. Moreover, the administration of an anesthetic is an art and not a science, and nurses after prolonged training become quite proficient in its giving. Whereas heretofore hospitals had to depend on unexperienced anesthetists, and since physicians in general were unwilling to undertake this work, the nurses gradually took up this field.

E. Klaus.

The British Medical Societies have all endorsed the requirement that only physicians give anesthetics. Germany and Austria allow only licensed physicians and dentists to administer anesthetics. Kentucky, Georgia and Ohio declare the giving of anesthetics by nurses as illegal. The nurses' registration law was passed with the understanding that it would not interfere with the practice of the medical profession. The Ohio State Medical Board has been appealed to, to prosecute nurses that are infringing on the profession. Let nurses who have the ability to give anesthetics study to become physicians or dentists, and specialize in anesthesia.

R. E. Skeel.

This subject is a hard one to settle. Many internes were not properly trained and consequently trained nurses worked into this field. Why the trained nurse? The giving of anesthetics is a knack hard to learn. I would rather have a nurse perform a cataract operation on my eye than any country doctor. Shall we therefore have nurses remove cataracts? If we concede the knack of anesthesia to the nurse we must concede the knack of cataract extraction, bone setting, etc., as well. Therefore, we must either keep our nurses as anesthetists or have competent men at our hospitals training our internes to become good anesthetists.

W. E. Gernhard.

Doctor Gernhard's discussion was directed almost entirely towards the criticism of a few individuals and one particular institution. His ideas were irrelevant to the subject under discussion.

Mr. Sheridan.

If this matter is pressed in the Legislature it will open up the Medical Practice Act. As a layman I would warn the medical profession of Ohio against the infringement of the Medical Practice Act. I would advise a very temperate discussion and avoid publicity.

M. J. Lichty.

I am sure the less publicity we give the question the better for us. As I look at the situation, I will say that if we go to protect ourselves as physicians we may lose. I believe anesthesia as given by nurses has only one excuse, and that is "cheapness." It is a mistake to stir this matter up more so to legislate upon it.

J. E. Tuckerman.

The great neglect is the lack of trained anesthetists to show our internes how to give anesthetics. The trouble is with our hospitals. If internes were properly instructed, we would have no need for nurse anesthetists. We owe this training to our intern, in order that he may broaden his knowledge.

F. E. Bunts.

We had doctors, graduates from medical college, who gave anesthetics poorly—then came the nurse with the quiet anesthesia produced by ether. I have had no experience with nitrous oxide. Since nurses have given anesthetics the amount of nausea, etc., has diminished. I do not mean to say that trained physicians could not do so, but I believe there would be relatively few men willing to take up this specialty. Colleges are not training men to become anesthetists nor orthopedic surgeons, nor genito-urinary surgeons, but they are merely preparing them.

Chas. K. Teter.

Dr. Teter read resolutions drawn up by the Cleveland Dental Association which spoke directly against the admission of nurses into this field.

M. E. Blahd.

There is no question about the doctor being able to give an anesthetic as well as a nurse. The main difficulty is to get doctors to give anesthetics as a specialty.

W. A. Medlin.

Medical schools do not give enough attention to the teaching of anesthesia. Of late it has been the tendency of the medical profession to allow inroads to be made upon their profession.

N. Rosewater.

I wish to emphasize the fact that however little of science the giving of anesthetics may require and the more of art, the small amount of science outweighs the art.

EXPERIMENTAL MEDICINE SECTION

The ninety-second regular meeting of the Experimental Medicine Section was held, January 12, 1917, at the Cleveland Medical Library, with H. T. Karsner, chairman.

Program:

1. The Influence of Certain Conditions on the Liberation of Epinephrin from the Adrenals, by J. M. Rogoff and G. N. Stewart.

We investigated various conditions, some of which we will briefly summarize. Blood was taken from the splanchnic veins after stimulation of the nerves and injected into other animals; this would always cause a rise in blood pressure. Stimulation of the splanchnic nerves liberates a substance

in the blood that stimulates the action of epinephrin. It was our purpose to prove that this substance is epinephrin. We used the denervated eye and the nictitating membrane reactions. The superior cervical ganglion of the cat is cut, after which the pupil on this side dilated under the influence of epinephrin.

The splanchnic nerve was stimulated with an electrode after the venous path from the adrenal was occluded by clamping the adrenal vein or vena cava. No reaction was obtained on stimulation of the nerve. When clamp was removed we obtained the reaction; however when the vena cava is clamped there is a slight dilation of the pupil which is due to the asphyxia. Something must have been liberated which dilates the pupil, but could not reach it until the clamps were released. After slowing the circulation by stimulation of the vagus nerve it required a longer time before the reaction took place, after the splanchnic was stimulated. Clamping off the circulation to the denervated eye invariably produced an increase in the effect.

The latent period of epinephrin secretion is very short. Splanchnic stimulation and injection of epinephrin at the level of the splanchnic veins produces a reaction at the same time. By comparing the circulation time of methylene blue and adrenalin, from adrenals to the eye ball, we find that the methylene blue arrives at the same time that the adrenalin reaction takes place. Therefore this substance which is liberated must be epinephrin. Light massage of the adrenals produces the same reaction as stimulation of the nerves. This reaction is obtained by massage after the splanchnic nerves have been cut, and even after stimulation fails to produce any reaction.

Quantitative estimations can be obtained with this reaction by giving various doses of adrenalin in saline or Ringer's solution, and estimating the time and strength of the reaction.

Does any liberation of epinephrin take place in the absence of splanchnic stimulation? We employed a method whereby a pocket is made in the vena cava by tying off the renal, and lumbar veins, and the smaller veins which are in that region. A clamp is placed near the orifices of the adrenal veins and near the cava, thus producing a pocket. The same reaction on the eye was employed. Blood flow and the amount of epinephrin contributed to the pocket from the adrenal vein was then estimated. Asphyxia and sensory stimulation produced no demonstrable increase in the liberation of epinephrin. The amount liberated is quite constant, the concentration never very high. It varies from 1-200,000 to 1-8,000,000.

The blood in the pocket was then tested by observing its effect on segments of uterus and intestine of the rabbit. Intestinal segments are inhibited by the addition of adrenalin, but they may likewise be inhibited by changes in temperature, solutions, etc. Any inhibition therefore cannot be taken as an indication of epinephrin unless checked by an uterine segment. The uterus gives the opposite effect, and most other substances either inhibit or have no effect whatever.

When successive specimens of blood were obtained from the pocket we found that the later specimens contained a higher concentration of epinephrin. If the concentration is very low it is advisable to use the serum, since it contains all of the epinephrin. We used the serum obtained from the pocket after asphyxia, and found that it inhibits the intestine but also inhibits the uterus. Therefore this substance cannot be epinephrin, but is some other substance since it can be recovered elsewhere in the body after asphyxia.

Fright, rage and other emotions were tried, but no evidence of liberated epinephrin was obtained.

The amount of epinephrin produced in the adrenals under certain conditions was estimated by the colorimetric method of Folin and Cannon. Stimulation of the splanchnic nerves causes an increased amount of epinephrin, therefore some of it must have been formed during the process of liberation. Excision of one adrenal depletes the remaining adrenal tem-

porarily, requiring about two days to recover the original epinephrin content. In rabbits operations performed in the region of the adrenals produces an oedema of the glands lasting from 1 to 20 days. There was a depletion of the epinephrin store until the oedema has subsided.

Morphine produces a state similar to fright in a cat, whereas in the dog it has an opposite effect. Nevertheless, there is as great a depletion of epinephrin store in the dog as in the cat after the administration of morphine. The same is true in the cat after actual fright. We sectioned the nerve of one adrenal of a cat, thus protecting it from depletion. These cats were frightened for eight hours, their pupils were dilated hair on end and at times relaxation of the sphincters took place, but no demonstrable decrease of epinephrin content could be demonstrated.

2. The Mechanism of Enzyme Action, by C. H. Fiske.

The order of stability in the animal body (fasting cats) of the amides of the four lowest saturated fatty acids, excluding formic, is as follows: valeramide, butyramide, propionamide, acetamide, the last named being the least readily hydrolyzed. This order does not agree with the relative rates of hydrolysis of these compounds by alkali or acid in vitro. The only property, having any known relation to catalysis, which does run parallel, is surface tension, in the sense that the more the substance lowers the surface tension of water, the more rapidly it is hydrolyzed in the body. In view of the well known relation between surface tension and absorption (Gibb's rule), it is suggested that these differences in stability in the organism may be associated with surface concentration.

CLINICAL AND PATHOLOGICAL SECTION

The one hundred and twenty-first regular meeting of the Clinical and Pathological Section of the Academy of Medicine was held January 5, 1917, at Cleveland City Hospital.

Program:

1. Various Phases of "Heart Disease" by Electro-Cardiograph, by E. P. Carter.

The first case had the left border of his heart at the anterior axillary line, the right border forming an obtuse cardio hepatic angle and extending about 4 cm. outside the right sternal margin. Marked liver pulse and a positive venous pulse in the neck. There is likewise a succussion splash heard over the precordium which is probably transmitted from the intestines. In face of this large heart there is an absence of any other sign of decompensation.

The second case has an enlarged heart both to right and left. There is a very definite reduplication of the first sound. He has an asynchronous ventricular systole, the lesion being most likely due to a lesion in the left branch of the bundle. Shortly after admission the heart began to fibrillate. The first element of reduplication in gallop rhythm is recognized as being due to the valves, but this man never had any evidence of any valvular lesion. He has, however, all the evidences of broken compensation.

The third case has a marked systolic thrill in the neck, a systolic murmur with a very soft diastolic murmur over the base, no second sound was heard on admission. A pistol shot was heard in the femoral and a capillary pulse easily demonstrated. Shortly after admission a distinct notch could be palpated in the catacrotus, the radial tracing showing a definite pulsus biferiens. This kind of pulse is characteristic of a prolongation in the systole of the ventricle.

2. Pulmonary Syphilis, by Richard Dexter.

Two cases were reported which had very similar histories and physical signs. Both complained of weakness, fever, loss in weight, and cough with pain in the chest. The physical examination revealed a definite wedge-

shaped area of dullness in the scapular region of the right side of one and the left side of the other. There was high-pitched tubular breathing free from rales present over the entire area of dullness. Whispered voice sounds were well transmitted, tactile fremitus slightly diminished. Exploratory puncture was done but no fluid obtained. The X-ray showed a definite area, of consolidation corresponding closely to what was found on physical examination. Both patients remained in the hospital without any treatment for two weeks. No material change in their condition was made out. Repeated examinations of sputum were negative for tubercle bacilli, complement fixation test for tuberculosis was negative, Wassermann on the blood strongly positive. Rigorous anti-luetic treatment which consisted of several doses of diarsenal and biniodide injections was instituted. Both cases recovered completely after about one month's treatment, practically no physical signs could be demonstrated.

3. Report of Two Cases of Syphilis with Stomach Complications, and One Case of Syphilis with Localized Periostitis, by H. N. Cole.

First case had his infection three months ago. On admission to the hospital he complained of pain in the stomach, anorexia, vomiting and tenderness in the epigastrium. Gastric analysis was negative, but the X-ray was suggestive of a gastric ulcer. After a thorough course of treatment his gastric condition cleared up entirely.

The second patient came to the hospital complaining of a swelling on his head and a desire to vomit. A considerable quantity of blood was found in the gastric contents. X-ray was unsatisfactory. A large gumma which had broken down was present over the parietal region, a fairly marked optic atrophy in one eye, and 200 cells in the spinal fluid. Symptoms cleared up under treatment.

The third patient had his infection three months ago. He came into the hospital with a definite maculo-papular rash and very acute tenderness over both knees and right elbow. X-ray shows a definite periostitis, which is a very rare phenomenon so early in the disease.

4. Lymphatic Leukaemia, by J. R. Young.

Man 45 years of age came into the hospital complaining of leg ulcers of three years' duration. The past history is negative. Physical examination reveals marked general lymph-glandular enlargement. Spleen is enlarged and palpable. The liver presents just at the costal margin, the pharynx is almost occluded by enlarged tonsils and adenoids. X-ray examination of the chest is negative; R. B. C., 3,700,000; W. B. C., 55,200; Hb, 45%. No change in blood picture since admission.

5. Aneurysm of Internal Iliacs, and Epithelioma of Jaw, by C. A. Hamann.

This patient was admitted to the hospital on a previous occasion complaining of pain in calf of the right leg. At that time he was treated for sciatica by stretching of the nerve but no relief obtained. Three years ago the left leg became involved, he had involuntary urination and defecation. Marked atrophy was present in both lower extremities. Examination revealed a tumor in the region of the buttocks which had a definite expansile pulsation. A trans-peritoneal ligation of the internal iliacs stopped the pulsation for a short time only, the subjective symptoms were much less. This is evidently a case of aneurysm of the branches of the internal iliac; possibility of a sarcoma may be ruled out by the fact that the tumor has a definite expansile pulsation. I wish to emphasize that in all cases of sciatica a careful investigation of the underlying cause be made.

The second patient had a small sore on his lower lip which was treated by either radium or X-ray with apparently complete recovery. Three months later a large mass appeared under the jaw which ulcerated through to the surface. This is the third case in the past two weeks which I have seen

where the original growth was apparently cured by either radium or X-ray with a subsequent enlargement of the lymph glands. The only rational treatment of epithelioma of the lower lip is a complete excision of the growth, together with all the glands draining that particular area.

6. A Case of Sub-phrenic Abscess, by F. S. Mowry.

Patient male, 26 years, came into the hospital complaining of a sudden attack of pain in right hypochondrium which came on suddenly and persisted. Examination revealed a slight icterus, abdomen moderately full, right hypochondrium slightly more prominent, no free fluid. The liver was three fingers breadth below the costal margin. W. B. C., 17,400; urine had a slight trace of albumin, no bile. Nine days after admission signs of fluid developed at the right base. Twenty c.c. of cloudy fluid was recovered by exploratory puncture. Ten days later a trocar was introduced into the right pleural cavity but no fluid was obtained; it was then pushed through the diaphragm and a large quantity of pus recovered. A rib was resected and drains introduced. The abscess drained profusely for two weeks, the patient however failed rapidly and became very anemic, transfusion at this time produced no benefit in the patient. A week later another transfusion was done, and since this time he began to improve rapidly.

7. Report of a Case of Nephrectomy in a Case of Kidney Destruction Due to Calculus, by J. R. Driver.

Patient gave a history of colicky pain over the left kidney for a period of several years with frequency of urination. Cystoscopic examination showed a very low phthalein for both kidneys. The left kidney excreting practically nothing. There was retention of the urea nitrogen of the blood, and there was more nitrogen in the urine from the right kidney. X-ray showed a marked degeneration of the left kidney with calculi. The prostate was considerably enlarged, and for this reason a retention catheter was introduced into the bladder. Patient was given large quantities of water to drink, after two weeks the phthalein output was increased, and the urea nitrogen of the blood diminished. At this time a nephrectomy was done, and patient made a complete recovery. If, however, we had operated earlier the patient would most probably have succumbed.

8. Hyperpyrexia of Renal Origin, by F. C. Herrick.

This patient, 20 years of age, had an acute attack of tonsillitis of four days' duration, one month later she had pain in her right lower abdomen headache, nausea with albumin and pus cells in the urine. A diagnosis of pyelitis was made at that time. Two months later she again had severe pain in the left flank, pus was present in the urine and colon bacilli grew out in culture. During this attack she had several chills and very high fever. Diagnosis, pyelitis. During the present illness she complained of a stabbing pain near the left costal margin, general malaise, severe chills and fever. At this time the left kidney was palpable and very tender. The temperature went up as high as 110, the highest temperature recorded was 111.2, W. B. C. 17,000. At times she would have temporary retention of urine, rigor and very high fever, which would subside after a copious discharge of urine. An exploratory incision was made and the kidney found normal, no perinephritis. After the operation the temperature ranged from 99 to 100, but shortly after she began having chills. Cystoscopic examination revealed both kidneys normal with scanty urine excretion from both sides.

9. Leg Ulcers of Doubtful Origin, by Dr. Stepfield.

This patient has a very large ulcer on his left lower leg which has persisted for almost two years without any change in its condition. The blood picture, Wassermann, are all negative. Three courses of mercurial injections produced no change in condition. Skin grafts and all other forms of medication were tried without any material benefit. With two months'

rest and fresh air the ulcer began to recede, but on his return to the city became larger. This ulceration is in all probability tubercular.

10. Double Abductor Paralysis of Larynx, by W. H. Tuckerman.

Since March this patient complained of hoarseness and attacks of asthma. In June he had a sudden attack of so-called asthma and a tracheotomy was performed to obtain relief. He was admitted to this hospital with the tracheotomy tube still in the larynx. Laryngoscopic examination revealed a double abductor paralysis. The patient gives a history of a luetic infection and has a strongly positive Wassermann. He just received a few injections of mercury and began to notice a definite change in his condition. Dr. Tuckerman then emphasized the more frequent use of the laryngoscope in any patient complaining of hoarseness.

11. Ten Cases of Small Pox, by H. O. Ruh.

Dr. Ruh presented ten cases of variola in different stages of the disease. The most interesting case was that of a mother who gave birth to a child while she had a well marked eruption of variola. Seven days later the child developed an atypical eruption which proved to be variola. The reasons for this atypical eruption are that either the mother had bestowed an immunity on the child, or the vaccination which the child received at birth lessened the severity of the attack.

12. Presentation of Pathological Specimens, by P. S. Murphy.

Two interesting specimens of aneurysm of the aorta were demonstrated; one had two separate sacculations. A very marked stenosis of the aortic valve was also demonstrated, which gave all the characteristic clinical signs during life.

A cystic degeneration of an old hemorrhage of the brain was demonstrated. This specimen came from a man who four years previous to his death received a compound fracture of his skull. At that time no decompression was done. Since his injury he complained of headache, dizziness and some mental disturbances.

COUNCIL MEETING

At a meeting of the Council of the Academy of Medicine held Tuesday, January 9, 1917, at the University Club, the following members were present: The President, Dr. Updegraff, in the chair; Drs. Bernstein, Birge, Bruner, Bunts, Follansbee, E. Klaus, Lenhart, Maschke, Sanford, J. J. Thomas, J. R. Tuckerman, W. H. Weir and Leo Wolfstein.

The minutes of the last meeting were read and approved.

The Chair requested the appointment of Dr. C. L. McDonald as chairman of the Program Committee. Appointment approved.

On motion the following were elected to active membership in the Academy:

Josephine M. Danforth, Oscar E. Townsend, E. A. Wakefield.

Dr. Klaus reported the following names of applicants for active membership, which on motion were ordered published:

I. M. Jarzynski, Frank J. Keeley, H. G. McCarty, R. J. May, Otis F. Simonds, J. N. Wychgel, E. K. Zavorski.

The name of C. H. Verowitz, also reported, was referred back to the Membership Committee.

On motion Dr. J. S. Tierney was reinstated in active membership.

On motion Dr. Otto Muhlhan was reinstated in associate membership in the pharmaceutical section.

On motion Dr. Leo Reich was transferred from non-resident to active membership in the Academy.

On motion Dr. F. Herbert Harch was received in transfer from the Stark County Medical Society.

On motion the following resignations were accepted:

C. L. Ruggles, now located in West Virginia.

Geo. F. Class, retired from active practice.

T. A. Costello, and

Katherine R. Moses.

Because of absence from the city due to ill health, Dr. Geo. P. Soyer was transferred to the non-active list until such time as he returns to active practice.

On motion Dr. Sanford was appointed a committee of one to arrange with the officers of the Medical Library Association for the use of the Library building for meeting purposes.

On motion the secretary was requested to arrange as previously for the operation of the projectoscope.

Dr. E. Klaus moved that a committee of three be appointed by the chair to consider the relation which should obtain for the ensuing year between *The Cleveland Medical Journal* and the Academy of Medicine of Cleveland. Motion seconded, and, after discussion, put and carried.

The chair appointed Drs. Follansbee, Sawyer and Lueke.

Dr. Follansbee asked to appoint Drs. R. E. Skeel and R. B. Newcomb members of the Legislative Committee subject to their acceptance. On motion the request was approved.

Dr. J. J. Thomas asked to appoint Drs. G. W. Moorehouse, A. F. Furrer and Willard C. Stoner as members of the Committee on Public Health, stating he had not as yet selected the fifth member. Request approved.

Dr. H. L. Sanford outlined a plan for a Press Committee which should act along educational lines—a sort of civic medical consultant. He asked for the views of members of the Council upon the proposed plan and whether such a committee, if created, would properly fall under the Civic Committee. The Council was of the opinion that the activities of such a committee would be clearly in the province of the Civic Committee.

Dr. Sanford stated that such a committee would have to be a rather large, flexible committee and that he would like to defer the appointment of the members of the Civic Committee. Request approved.

Dr. E. Klaus asked to appoint Dr. E. O. Houck to the Membership Committee, and asked for permission to report the other members at a later meeting. Request approved.

On motion Drs. John Phillips, J. J. Thomas, H. J. Gerstenberger and S. W. Kelley were appointed members of the Milk Commission.

The question of sending programs to the editors of the newspapers was laid upon the table. The Secretary was requested, however, to inquire of the Columbus Academy of Medicine just what their plan was and how it worked.

Dr. Sanford presented a communication from the Cleveland Welfare Council and asked that the Council of the Academy appoint representatives to that body. On motion the chair appointed Drs. H. L. Sanford and Wm. Evans Bruner.

On motion the following were appointed to the Auxiliary Committee on Medical Red Cross Work: Drs. G. W. Crile, H. G. Sloan and Arthur B. Eisenbrey.

Dr. H. L. Sanford reported for Dr. J. J. Thomas and himself, their attendance upon the conference called by the Real Estate Board to consider the advisability of a city manager plan for Cleveland.

BOOK REVIEWS

The Practical Medicine Series, Volume IV, Gynecology. Edited by Emilius Dudley, A. M., M. D., and Herbert M. Stowe, M. D. Series 1916. The Year Book Publishers, Chicago. Price, \$1.35.

This volume of 230 pages is a collection of abstracts from the current gynecological literature of the past year. Most of the important work appearing during this time is abstracted and is further commented on by the author.

The volume serves for a hasty review of the gynecological literature for 1915 and will be found valuable to those who have not kept up their reading, especially of the several excellent weekly and monthly journal abstracts which are now available. W. D. F.

How to Live. Rules for Healthful Living Based on Modern Science. Authorized by and Prepared in Collaboration with the Hygiene Reference Board of the Life Extension Institute, Inc. By Irving Fisher, Chairman, Professor of Political Economy, Yale University; and Eugene Lyman Fiske, M. D., Director of Hygiene of the Institute. Eighth edition. Funk & Wagnalls, New York and London. Price, \$1.00 net.

To further its work the Life Extension Institute has encouraged the publication of this small volume, and its popularity can be judged from the fact that it has passed eight editions. Its purpose, to give "rules for healthful living based on modern science," has been accomplished. Any man, interested in living a life favorable to its prolongation, may read the volume with profit. It is heartily endorsed. H. S. F.

The Practical Medicine Series, Volume VI, General Medicine. Edited by Frank Billings, M. S., M. D., Head of the Medical Department and Dean of the Faculty of Rush Medical College, Chicago, assisted by Burrell O. Raulston, A. B., M. D., Resident Pathologist, Presbyterian Hospital. Series 1916. The Year Book Publishers, Chicago. Price of this volume, \$1.50.

Billings continues to edit the volume on General Medicine to the great profit of his readers. He has selected the best in the literature of the past year and has presented the material in concise and well chosen sentences. The volume is believed to be well worth having as a handy reference work incorporating the advances of the past year. H. S. F.

The Practical Medicine Series, Volume VIII, Materia Medica and Therapeutics. Edited by George F. Butler, Ph. G., A. M., M. D.; and **Preventive Medicine**, Edited by William A. Evans, M. S., M. D., LL. D., Ph. D., Series, 1916. The Year Book Publishers, Chicago. Price, \$1.50.

Butler has summarized the advances in therapeutics of the past year in a well written volume. Wm. A. Evans, Professor of Preventive Medicine, Northwestern University, has added extracts from the literature of preventive medicine. The present volume is a means of keeping the general practitioner up to date. H. S. F.

Diseases of the Digestive Tract and Their Treatment. By A. Everett Austin, A. M., M. D., Present Assistant Professor of Clinical Medicine, in charge of Dietetics and Gastrointestinal Diseases, Tufts College, etc. With eighty-five illustrations, including ten color plates. C. V. Mosby Company, St. Louis, 1916. Price, \$5.50.

Doctor Austin has written a readable and well arranged book on a most important subject. We wonder why there are so many works on the digestive

tract—in view of the fact that the various authors have so little that is new in their lengthy messages, and we feel that it is not amiss to criticize these well-intentioned men for their needless labor of rehashing old material. The reviewer cannot help but regret that Dr. Austin should have omitted Sippy's diet in gastric ulcer and some of the recently observed phenomena in gastric carcinoma, viz., comparison of the fasting contents with the fluid aspirated after a meal (Gluzinski's test); and Wolff-Junghan's test. Slight mention is made of Carlson's original investigations, and the splendid observations of Rehfuß have seemingly escaped the author. The work cannot be recommended as one containing reports of the most recent observations in gastrointestinal diseases.

H. S. F.

A Text-book on the Practice of Gynecology, for Practitioners and Students. By William Easterly Ashton, M. D., LL. D., Professor of Gynecology in the Graduate School of Medicine of the University of Pennsylvania, etc. Sixth edition, thoroughly revised. W. B. Saunders Company, Philadelphia and London, 1916. Price, cloth, \$6.50 net.

This revised edition of a work that has been a standard in the United States since 1905 will receive a warm welcome from Dr. Ashton's many pupils, both those who have studied directly under him, and also those who know him only through his published work. We are told in the preface and on the title-page that this volume contains much new and revised matter, and over one thousand drawings. The latter may possibly lack a little of the wonderful artistic beauty of those in some other recent works on gynecology, but they possibly illustrate the points they are intended to show all the better for that. They are certainly clear and accurate.

The book follows a more or less classical order, treating first of methods of examination and therapeutics, then taking up the reproductive organs in order, and closing with chapters upon general surgical technique and the handling of abdominal surgical conditions that a gynecologist is likely to encounter outside the strict limits of his field. The sections upon the examination of tissues, neoplasms of the bladder, shock, sterility, repair of the perineum, etc., are entirely rewritten or new.

That this is a volume of the greatest value it is unnecessary to state. Yet it illustrates the difficulties of revising an old text-book without producing a patch-work effect of old and new matter. It is rather easy to pick out the portions that have been permitted to stand unchanged and in such parts we find statements that one might not care to offer a student as the latest gynecological orthodoxy. For example, this patch-work is illustrated by finding local removal of vaginal carcinoma recommended (p. 291). Again, probably very few surgeons persist in the use of silk-worm gut and perforated shot in cervical operations. Patients long ago successfully revolted at the pain of their removal. Yet not far from such statements of ancient faiths we meet a strictly up-to-the-minute summary of Dr. Crile's theories regarding shock.

In spite of such minor defects, however, a very fine work has been assured of a new period of usefulness, by the appearance of this good edition.

J. T. S., Jr.

ACKNOWLEDGMENTS

The Practical Medicine Series, Volume VIII, Materia Medica and Therapeutics. Edited by George F. Butler, Ph. G., A. M., M. D.; and **Preventive Medicine.** Edited by William A. Evans, M. S., M. D., LL. D., Ph. D. Series 1916. The Year Book Publishers, Chicago. Price, \$1.50.

The Practical Medicine Series, Volume VII, Obstetrics. Edited by Joseph B. DeLee, A. M., M. D., with the collaboration of Herbert M. Stowe, M. D. Series 1916. The Year Book Publishers, Chicago. Price, \$1.35.

The Practical Medicine Series, Volume IX, Skin and Venereal Diseases. Edited by Oliver S. Ormsby, M. D., and James Herbert Mitchell, M. D. Series 1916. The Year Book Publishers, Chicago. Price \$1.35.

The Practical Medicine Series, Volume X, Nervous and Mental Diseases. Edited by Hugh T. Patrick, M. D., and Peter Bassoe, M. D., with the collaboration of Lewis J. Pollock, M. D. Series 1916. The Year Book Publishers, Chicago. Price, \$1.35.

Diseases of the Digestive Tract and Their Treatment. By A. Everett Austin, A. M., M. D., Former Professor of Physiological Chemistry at Tufts College, University of Virginia, and University of Texas; Present Assistant Professor of Clinical Medicine, in Charge of Dietetics and Gastrointestinal Diseases, Tufts College; etc. With eighty-five illustrations, including ten color plates. C. V. Mosby Company, St. Louis. 1916. Price, \$5.50.

Modern Medicine and Some Modern Remedies. Practical Notes for the General Practitioner. By Thomas Bodley Scott, with a preface by Sir Lauder Brunton, Bart., F. R. S. Paul B. Hoeber, New York, 1916. Price, \$1.50 net.

Clinical Gynecology. By James C. Wood, A. M., M. D., F. A. C. S., etc. 236 pages, cloth. Boericke & Tafel, Philadelphia, 1917. Price, \$2.00 net.

The Medical Clinics of Chicago. Volume II, Number IV (January, 1917). Octavo of 231 pages, 20 illustrations. W. B. Saunders Company, Philadelphia and London. Published bi-monthly. Price per year: Paper, \$8.00; cloth, \$12.00.

Physical Examination and Diagnostic Anatomy. By Charles B. Slade, M. D. Chief of Clinics, General Medicine, and Instructor in Physical Diagnosis, University and Bellevue Hospital Medical College, New York. Second edition, thoroughly revised, 12mo., of 150 pages, illustrated. W. B. Saunders Company, Philadelphia and London, 1916. Price, cloth, \$1.25 net.

A Manual of Nervous Diseases. By Irving J. Spear, M. D., Professor of Neurology at the University of Maryland, Baltimore. 12mo. of 660 pages, with 169 illustrations. W. B. Saunders Company, Philadelphia and London, 1916. Price, cloth, \$2.75 net.

A Treatise on Diseases of the Skin. For the Use of Advanced Students and Practitioners. By Henry Stelwagon, M. D., Ph. D., Professor of Dermatology, Jefferson Medical College, Philadelphia. Eighth edition, thoroughly revised. Octavo of 1,309 pages, with 356 text-illustrations and 33 full-page colored and half-tone plates. W. B. Saunders Company, Philadelphia and London, 1916. Cloth, \$6.50 net; Half Morocco, \$8.00 net.

The Practice of Gynecology. For Practitioners and Students. By W. Easterly Ashton, M. D., LL. D., Professor of Gynecology in Graduate School of Medicine of the University of Pennsylvania. Sixth edition, thoroughly revised. Octavo of 1,097 pages, with 1,052 original line drawings. W. B. Saunders Company, Philadelphia and London, 1916. Price, cloth, \$6.50 net; Half Morocco, \$8.00 net.

MEDICAL NEWS

Fellowship for Public Health Men.—The Harvard Medical School, in co-operation with the Boston Dispensary, offers a Fellowship to graduates in medicine who desire to pursue a course of study leading to the Certificate of Public Health in the School for Health Officers, or to the degree of Doctor of Public Health in the Department of Preventive Medicine and Hygiene.

Fellows are required to give half their time to the treatment and supervision of the sick in their homes, in a district of the city of Boston, and half their time to study or research at the Harvard Medical School. Appointments may be made for one or two years. The stipend is \$750 per year.

Applications stating previous experience, references, etc., should be made to Doctor Milton J. Rosenau, Professor of Preventive Medicine and Hygiene, Harvard Medical School, Boston, Mass.

Army Medical Corps Examinations.—The Surgeon General of the Army announces that preliminary examinations for appointment of First Lieutenants in the Army Medical Corps will be held at convenient points the first Monday in each month. Full information concerning these examinations can be procured upon application to the "Surgeon General, U. S. Army, Washington, D. C."

The essential requirements to secure an invitation are that the applicant shall be a citizen of the United States, shall be between 22 and 32 years of age at the time of commission at the close of the Army Medical School, a graduate of a medical school legally authorized to confer the degree of Doctor of Medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training as intern after graduation.

Graduate physicians who are serving their internship and who meet the other requirements can be examined for appointment with the understanding that they will complete the required postgraduate hospital internship before coming to the Army Medical School.

Those who qualify at their preliminary examination and complete their hospital internship by July 1st will be ordered to the Army Medical School for the special session of the school commencing July 9th. The regular session of the school will open on October 1st.

In order to perfect all arrangements for the examination, applications should be completed at the earliest practicable date.

There are at present 230 vacancies in the Army Medical Corps.

After July 1st, there will be 222 additional vacancies.

Central States Orthopedic Club.—A most successful meeting of the Central States Orthopedic Club was held in Cleveland and Elyria on December 27, 1916. Forty-two members were in attendance, not including either local guests or those from Northern Ohio, Pittsburgh and Boston. Clinics were held at Mount Sinai Hospital, Lakeside Hospital and St. Luke's Hospital, in Cleveland; and in the Gates Hospital for Crippled and Deformed Children, in Elyria, Ohio. On December 28th the Club attended clinics in Cincinnati. Following is the program of clinics held in Cleveland and Elyria, Ohio:

Central States Orthopedic Club, Cleveland, O., December 27, 1916—Mt. Sinai Hospital. 9:00 A. M., Dr. Stern—Orthopedic Cases. Three Types of Wry Neck—Myositis Ossificans, Myositis after Tonsillectomy, Congenital Vertebral Anomalies; Congenital Fusion of Radius and Ulna; Result of Gallie Operation for Paralytic Calcaneus; Sarcoma of Elbow—Bone Graft—Recurrence; Congenital Osteomalacia; Cases of Angio-tropho-neurosis; 9:30 A. M., Dr. Jacobs—Demonstration of Cases; Neisserian Infection

of Hip Seminal Vesiculotomy; Intra-Sinus Injection of Salvarsan. 4 Months Child; 9:40 A. M., Miss Roche—Gas Anesthesia; Congenital Hip Dislocation. Two cases. 10:00 A. M., Dr. Blahd—Demonstration of Case; Resection of Posterior Spinal Roots for Spastic Paraplegia. 10:20 A. M., Dr. Harrison—Demonstration of Cases; Dakin and Light Treatment for Osteomyelitis. 10:40, Dr. Steinfeld, Columbus, Ohio—Demonstration of Cases; Charcot's Joint—Shoulder; Hibbs Operation for Tbc. Spine. 11:00 A. M.—Special Street Car for Lakeside Hospital.

Lakeside Hospital, 11:30 A. M. Eastern Time. 11:30 A. M., Dr. Brackett, Boston, Mass.—Address. 11:50 A. M., Dr. Warner—Manufacturing of Nitrous-Oxide Gas. 12:10 P. M., Miss Hodgins—Administration of Nitrous-Oxide. 12:30, P. M., Dr. Morrill—Reduction of a Congenital Dislocation of Hip. 12:50 P. M., Dr. Bauman—Demonstration of Orthopedic Cases. 1:10 P. M., Dr. Jones—Foot Inspection and Shoe Conditions in U. S. Army. 1:30 P. M., Complimentary Luncheon at the Hospital.

St. Luke's Hospital—3:00 P. M. Eastern Time. 3:00 P. M., Drs. Skeel and Teter—Operative Demonstration; The Theory and Practice of Gas Anesthesia. 3:30 P. M., Dr. Kelly—The Surgery of Childhood. 3:45 P. M., Dr. Stepp—Demonstration of Patients and Radiographs; Fractures of the Spine. 4:05 P. M., Dr. Spurney—Presentation of Cases; Sarcoma of Femur; Thrombo-Angitis Obliterans. 4:20 P. M., Dr. May—Radiographic Demonstration; Bone Tumors. 4:30 P. M., Dr. Stern—Cases of Bone Grafting; Sarcoma of Humerus; Ununited Fracture of Hip; Ununited Fracture of Radius and Ulna; Ununited Fracture of Tibia; Arthroplasty of Jaw. 4:45 P. M., Special Street Car for Union Depot; 5:30 P. M., Special Pullman for Elyria, O.

The Gates Hospital for Crippled and Deformed Children, Elyria, O., 5:30 P. M. Central Standard Time. 5:30 P. M., Drs. Hull, Smith, Clement, Elyria—Demonstration of Patients and Radiographs. 6:30 P. M., Dr. Stern, Cleveland—Orthopedic Cases. 6:45 P. M., Dinner at Hotel Andwur. 7:35 P. M., Mr. Allen, Treasurer Gates Hospital for Crippled and Deformed Children—Address: The Establishment of an Orthopedic Hospital in a Small Community. 8:10, P. M., Special Sleeper for Cincinnati.

Bellevue Hospital Ophthalmological Service.—An ophthalmological service has been added to the other departments of Bellevue Hospital, New York. It is located in the new surgical pavilion but is entirely distinct from the rest of the hospital, having its own operating, examining and dressing rooms; a staff of attending surgeons, special internes and nurses; its capacity for the present will be 50 beds. The service is in charge of Dr. Charles H. May, attending surgeon, who will have as his principal assistants Drs. Julius Wolff and John M. Wheeler.

Health and Sanitation in the United States Navy.—The chief object of concern in the Navy to the Surgeon General and the Medical Corps, is the matter of health and sanitation and the clean living of the personnel, essential to efficient service. I doubt if the families or friends of the young men who enter the Navy realize how carefully guarded as to health conditions these young men are. No institution of private training is so zealous for the well-being of its charges, or so watchful for the preservation of its own good name as is the Medical Department of our naval service. A constant pride is exhibited by our medical officers in maintaining health and sanitation on the ships or stations under their care, and constant efforts are being exerted to provide further safeguards.

Mortality statistics tell us that if these young men remain on the farm or in the city, eight out of every thousand will die during the year from the ordinary hazards open to all of us in the way of disease and injury during what should be the healthiest years of our lives. But last year only 4.48 per

1,000 of the naval personnel were lost by death. Could anything be presented more convincing of the efficiency and devotion of our caretakers of health?

Incident to the nature of a seafaring life is of course the constant menace of drowning, and of our total deaths 51, or one-sixth, are due to this cause. Of these, however, 21 are those who went down with the F-4.

It is noteworthy that the three predominant causes of death, drowning, tuberculosis, and pneumonia, all show upon analysis encouraging improvement over preceding years. Tuberculosis also, as it is handled in the Navy, is found less frequently in naval than civilian life. To quote statistics again, our civil population between the ages of 15 and 60 years owes 30 per cent of its total deaths to this disease; naval mortality during 1915 owes 11 per cent of its deaths to this cause, and this is being materially bettered each year.

The activities of the medical department of the Navy during the past year have been unusually marked. Naval and military developments of this unprecedented epoch of military history are constantly being observed and proper use made thereof in the plans and activities of our own service. Our medical officers detailed for observation purposes with the warring powers are informing themselves of all facts available pertinent to the medico-military aspects of naval life.

Our own military activities in the last two years have developed upon our shoulders a large degree of medical care and treatment of the people of Haiti and Santo Domingo. In the former country affairs have resolved themselves into the formation of an orderly system of government, in which the United States is doing its utmost to lend assistance to the local medical authorities. Our medical officers, acting in amicable unison with a commission of leading Haitian physicians, have gone over the existing laws relative to public health matters, and new laws have been drafted making necessary changes. Certain of the more important of these changes are now being put into execution under the present regime until such time as the proposed alterations of the Haitian statutes can be secured. Undoubtedly the future will yield as much credit for notable sanitary efforts here as has been the case in the past in Panama and Porto Rico.

The usefulness of a hospital ship as a necessity in modern warfare has been emphasized by the European conflict, and the naval act of this year, besides increasing the Medical Corps from 347 officers and 1,500 men to 600 officers and 3,000 men, besides facilitating advancement in the Hospital Corps from the lowest enlisted rating to that of actual commissioned officer, and besides increasing the total appropriation for the medical department from 1682,000 last year to \$1,187,728 for the current year, has led the navies of the world in authorizing the construction of a model hospital ship, which will be a veritable Bellevue afloat. The war across the Atlantic has demonstrated the value of the hospital ship. The British alone employed over 40 ships of this class during the Gallipoli campaign. These ships and the ships employed by other nations, however, were designed for other purposes and hastily converted to meet the emergency. The new hospital ship being constructed by the Philadelphia Navy Yard will be an oil-burner, with all that this means for comfort and cleanliness. A stabilizer will make for steadiness afloat. Not only will she provide hospital accommodations for the sick of the fleet, but experience of a number of years with the *solace* has shown the necessity of making provision for an out-patient department, wherein men of the fleet may receive special treatments and examinations, returning to their ships on the same day.

The Navy is also to be congratulated upon the consistently maintained standards that are giving us a personnel which is the pick of the ambitious youth of our Nation. During the past year 106,392 sought enlistment in the Navy. Of these only 30.18 per cent were accepted. During the last four years, owing to a full or relatively full complement, the large number of applicants, and consequent ability to make more careful selection, the percent-

age of acceptances has decreased from an average for the previous six years of 52.67 to 30.18. The present rigidity of physical requirements not only insures a fine standard of men but helps to lighten the pension load of the country in future years. The urgent need of more men, as would happen in time of war, could be met by a modification of the standards without entailing the acceptance of any deficient types.

The provisions made for the medical department by the Sixty-fourth Congress, on the recommendation of the department, were timely and far in advance of any former provision. Promotions and higher rank were accorded to the commissioned officers. The reorganization of the Hospital Corps insures advancement in their profession and promotion in rating to all, under methods of training and recognition of ability not before possible. This progress had its inception in the establishment in 1914 of the two finest professional training schools for hospital corpsmen in the world, one on the Atlantic at Newport and one on the Pacific coast at San Francisco. Hand in hand with this training there now exists a satisfactory steady flow of promotion through ratings similar to those of the seaman branch, established by a recent act of Congress in the appropriation act for 1917.

Successful schools have been established in Samoa and Guam for training native women in nursing. Homes for nurses at Mare Island and Boston have been furnished, and provision has been made on the coast lines south of Norfolk and Mare Island, which are as yet unprovided with Navy hospitals, for the calling into being of mobile Red Cross hospitals of 250 beds each, with complete personnel and equipment. To prepare the Medical Reserve Corps a correspondence school has been initiated for the purpose of training these officers. The higher standards, the zeal and sacrifices of the men in this corps, and their devotion to health and sanitation, can not be too highly commended.

Authority has been given by Congress for ample reserve stock, medical and surgical supplies, which is recognized as essential in a comprehensive plan of being ready for emergencies.

The Council on Pharmacy and Chemistry.—In his chairman's address before the Section on Pharmacology, R. A. Hatcher, New York (*Journal A. M. A.*, Nov. 4, 1916), dwells on the duty of the medical profession toward the Council on Pharmacy and Chemistry. Therapeutics was in a condition termed chaotic at the time the Council was formed, about eleven years ago, and while the conditions are greatly improved, the advance is incomparably less than it would be if teachers in medical schools had taken a more serious interest in the work. The early efforts of the Council were devoted largely to disproving the misleading claims of nostrum exploiters, but in spite of the exposures made, they are still doing it without any pretense of disputing the work of the Council and even leading medical journals are still carrying their advertisements. Dr. Hatcher speaks plainly to force realization of the need of correcting these conditions. Every teacher of pharmacology and therapeutics can render a distinct service to medicine by co-operating with the Council in its work. It has exerted a great and good influence, not only here but in England and Germany, but the profession is still supporting medical journals that are promoting the fraudulent preparations which have been shown up. This condition is not only anomalous, but is in its way ridiculous.

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THE SIGNIFICANCE OF BLOOD PLATELETS

By ROGER I. LEE, M., D., and
GEORGE R. MINOT, M. D., Boston, Mass.

(From the Medical Service and Pathological Laboratory of the Massachusetts General Hospital.)

In the study of the blood the only formed elements which receive attention, as a rule, are the red blood corpuscles and the white corpuscles. The third formed element in the blood, the blood platelets, have received little attention. The medical profession in general seem hardly aware of the existence of blood platelets and quite ignorant of their possible importance. In certain of our large clinics the blood platelets are entirely disregarded, even in the most elaborate investigations of the blood. One reads with amazement the statement in a well-known text-book that there is as yet no evidence that the blood platelets circulate as such in the body. In some other text-books, even in some of those devoted to the blood diseases, blood platelets receive scanty mention and the importance of abnormalities of the blood platelets in the causation of disease is occasionally entirely ignored.

Furthermore, one can find repeated references that the blood platelets are derived from the nuclei of red cells, from broken down red cells or from broken down white cells. Nevertheless there is ample evidence now at hand showing that the blood platelets are a distinct blood entity, originating from definite cells in the bone marrow.

Furthermore, the blood platelets have very positive and important functions and there are certain definite diseases attributable to pathological alterations of the blood platelets.

The blood platelets have actually been recognized as separate identities in the blood since the 80's, when Bizzozero¹ and Hayem² first worked with them. These small bodies are present in the blood of all mammals but not in the blood of birds or of reptiles. These latter animals usually have cells which may be interpreted as

homologues not of the blood platelets but rather of the megakaryocytes from which the blood platelets arise. The blood platelets can actually be demonstrated in vivo by the examination of the mesentery of a guinea pig or rabbit under the microscope. For many years the origin of the blood platelets was in considerable dispute, but finally in 1906 Dr. J. Homer Wright³ published his brilliant researches and demonstrated that the blood platelets were fragmented particles of protoplasm of the megakaryocytes of the blood forming organs. These fragments normally vary somewhat in size, averaging about 3 μ in diameter, and often appear smaller in fixed preparations. They are normally disc-shaped, though in certain instances elongated and other forms are found. Their appearance is that of a hyaline ground substance, often with projections of protoplasm due probably to their amoeboid activity. Near their center is a darker stained inner substance often containing one or more granules. In the human, megakaryocytes only occur normally in the bone marrow. In disease, in embryonic life and in the lower animals megakaryocytes are found in the spleen as well. Mammals, who are the only creatures who have blood platelets are the only creatures who have megakaryocytes in the blood-forming organs. This relationship is further substantiated by a reasonably close parallelism between the number of the blood platelets in the blood in life and the histological findings in the bone marrow with a special reference to the megakaryocytes after autopsy. Dr. Wright's findings have been substantiated by Bunting and others and are now fairly well accepted by histologists.

As soon as blood platelets began to be studied, at once much speculation arose as to possible significance of variation and as to the function, if any, of the blood platelets.

Blood platelets can be counted or estimated in several ways. In the first place, a blood smear, taken in the usual way and stained by one of the modifications of Romanowsky's stain, preferably the modification of Wright, will give a reasonably accurate approximation of the number of blood platelets present, under the following conditions: All of the technic of making the preparation must be carried out not only carefully but promptly. For example—it is possible under the condition of partial coagulation to get a smear showing red and white cells, but such a preparation will show either absent or diminished platelets, since the platelets are transformed with the onset of coagulation. Furthermore, a careless

technic will permit the platelets to be unduly clumped together in one spot, giving the appearance of profusion of platelets in one place and paucity of platelets in another. But with reasonable care and with considerable experience, the relative number of platelets can be determined in a stained blood film, which can also be used for other purposes, such as the study of the red cells, the demonstration of malarial parasites and the study of the differentiation of the white cells.

The method of vital or post-vital staining, particularly with cresyl blue, is to be much preferred for the approximation of the platelets, as with this procedure the platelets are brought out much better and their finer morphology can be studied. This method is, of course, also very valuable in the study of the reticulation of the red blood corpuscles. Our own studies have utilized both these methods, although for routine purposes the first is often sufficient. Obviously more accurate is the actual enumeration of blood platelets by one of the several methods devised. The most useful are those described by Pratt⁵ and Wright and Kinnicutt⁶. In these methods the platelets are actually counted very much as the red and white corpuscles are counted. Under normal conditions the blood platelets vary in man between 200,000 and 400,000, averaging about 250,000. The blood platelets in the other mammals have wider variations and different normal numbers.

Extensive studies have been made by various workers as to the conditions in which blood platelets vary widely in man. Pratt⁵, Duke⁷, Webb⁸ and his co-workers and many others have studied the blood platelet variation in normal and abnormal conditions. From the literature and from our own observations certain general deductions may be permitted concerning the variation in the number of blood platelets. The essential consideration always to be kept in mind is that the blood platelets represent the activity of one particular cellular element of the blood-forming organs, namely, the megakaryocyte. In other words, the increase in the number of blood platelets in a given condition depends precisely upon the reaction of the megakaryocytes to that condition. An increase of blood platelets, theoretically at least, may be attributed to increased rate of formation of blood platelets from the usual numbers of megakaryocytes, to an increased number of megakaryocytes, or to the abnormally early extrusion of platelets after formation.

The administration of pyridin, for example, will stimulate the megakaryocytes and cause an increase in the production of the blood platelets.

Certain substances, like benzol in large doses, tend to diminish the platelet count. Toxic substances, including bacterial toxins, X-ray, in small doses, particularly experimentally, tend to increase the platelet count, presumably by irritation and stimulation of the megakaryocyte, while in large doses the same substances tend to reduce the platelet count perhaps by actual destruction of the blood platelets but presumably by depression, exhaustion or even destruction of the megakaryocytes. In the various infections, therefore, one sees varying platelet counts, perhaps the general tendency being that in the acute infections, as in typhoid fever, the platelet count is somewhat reduced during the active course of the disease and increased with the subsidence of the acute process. In tuberculosis and various other chronic infections and in secondary anemias, either associated with an infection or with other conditions, increased platelet counts are the rule. However, we find alteration in the platelet count in other conditions than those that can be classified as toxic. The platelet count is almost invariably increased after severe hemorrhage and after splenectomy. Webb⁸ and others have shown that the platelets as well as the red and white cells are increased in high altitudes. Exposure to sunlight apparently increases the platelet count. Menstruation and pregnancy and other physiological processes also affect the platelet count.

In general, as we have pointed out elsewhere⁹, we prefer to regard the platelet count as an index of the activity or inactivity of one of the elements of the bone marrow, namely, the megakaryocyte. A rare exception to this statement may be recorded in certain unusual conditions in which there is marked increase of the destruction of the circulating platelets. The activity of this particular element of the bone marrow tends to run parallel to the activity of the other elements of the bone marrow. This parallelism seems to be rather closer between the elements that form the red corpuscles and the elements that form the platelets in the bone marrow than between the megakaryocytes and the elements that form the polynuclear leucocytes. We have, for example, many substances which act almost as a specific stimulus in increasing the polynuclear leucocytes. This stimulus acts very quickly and is frequently temporary. We have observations, however, that tend to show

that the stimulus, as usually seen in pneumonia, which produces a leucocytosis, is not necessarily specific, since we occasionally find in pneumonia the types of red cells which indicate altered bone marrow activity as well as an increase of blood platelets.

Our studies^{9 10} on the effect of splenectomy, particularly in abnormal conditions, on the activity of the bone marrow have led us to believe that the element that forms the polynuclear leucocyte is almost immediately stimulated, as evidenced by a rapid, intense polynuclear leucocytosis. The stimulus to the bone marrow element that produces the red cells while often evident within the first few days, is, as a rule, not marked until after several days. The increase in the blood platelets begins as a rule fairly constantly about the fourth day, although varying from the second to the tenth day. We thus infer, that the effect of a given stimulus on the platelet count can be measured in days while the effect of the same or a similar stimulus on the polynuclear count can often be measured in hours. As we have said, we have found this conception of the variation in the platelet count to be of very great value in estimating the functioning activity of the bone marrow, particularly in diseases of the blood. Thus we find in secondary anemia in which the bone marrow is actively regenerating not only an increasing red count with an increase in the stimulative forms of the red cells and a tendency to a polynuclear leucocytosis, but also an increased platelet count. On the other hand, in certain other anemias a low blood platelet count furnishes important evidence either of the inactivity of the bone marrow or of bone marrow destruction or what amounts to the same thing, the replacing of the normal constituents of the bone marrow by abnormal structures, either frank tumors, leukemic infiltrations or the abnormal histological elements, which are constantly found in the bone marrow of pernicious anemia. Furthermore, we have made certain observations which tend to show that variations in size of the blood platelets, although not as significant as variations in numbers, may permit of deductions as to the state of the bone marrow.

In a recent paper, still in press, Minot has fully discussed the blood conditions associated with a low platelet count. As would be expected, low platelet counts are found in certain forms of tumor of the bone marrow in which the normal bone marrow is replaced by tumor tissue, in lymphatic leukemias, in aplastic anemia and in pernicious anemia and in certain other anemias variously classified.

In chronic myelogeneous leukemia the blood platelets are increased and in this condition the megakaryocytes are found in the cellular accumulations in the bone marrow, spleen and liver, thus representing an enormous increase in their absolute number.

We have ample evidence as to the rate of production of the blood platelets. We can infer from their numbers the activity of the parent cells, the megakaryocytes, and thus indirectly with the help of observations on the red and white cells we have a criterion of considerable value in the estimation of the activity of the bone marrow as a whole.

Our own clinical experience gives abundant testimony of the value of the estimation of the numbers of blood platelets as a test of bone marrow activity. Thus we place considerable dependence on the number of blood platelets as a differential point between secondary and primary anemias. The platelets are notably increased in the usual secondary anemia but markedly diminished in pernicious anemia. After hemorrhage a great increase of blood platelets indicates a satisfactory attempt for blood regeneration. In pernicious anemia the number of blood platelets furnishes an excellent clue to the question of the immediate course of the disease towards relapse or remission. Furthermore, greatly diminished blood platelets always indicate serious interference with the functioning activity of the bone marrow and forms a basis for not only general prognosis in various blood diseases but also for opinion as to the probable influence of therapeutic measures directed toward increasing the activity of the bone marrow.

We have not as yet, unfortunately, any methods of studying the rate of destruction of the blood platelets. Duke's¹¹ experimental work and our own observations on transfused platelets in purpura hemorrhagica and hemophilia show the duration of the life of the blood platelets to be about four days. Nevertheless, there are conditions in which the evidence points to the fact that the blood platelets are actually destroyed after their formation. For example—the work of Lee and Robertson¹² shows that an anti-blood-platelet serum of high potency will destroy blood platelets both in vitro and in vivo. In these experiments it could not be demonstrated that the parent cells were vitally affected. Furthermore, in certain clinical cases associated with a low blood platelet count, the pathological findings showed megakaryocytes in the bone marrow apparently in normal numbers and apparently of normal structure.

These conditions, while perhaps rare, must still be borne in mind.

The fate of the blood platelets is still uncertain. With a full appreciation of the fact that other substances than blood platelets can assist in coagulation and also that the whole trend of the best scientific opinion is toward the belief that coagulation is a physical colloidal change, we are still inclined to the view that the blood platelets in disappearing from the blood are perhaps taken up by the tissues and that the blood platelets furnish, in part at least, the active coagulating principle in the tissue juice. It has been repeatedly shown that tissue juice and blood platelets can be used interchangeably in assisting coagulation, and furthermore that an identical active principle can be obtained from both.

The Physiology of the Blood Platelets.

Since their discovery, the blood platelets have been constantly associated with the process of coagulation. It is generally agreed that the blood platelets furnish a substance which hastens coagulation. But there is still much discussion as to the exact method and the importance of the action of the blood platelets in coagulation. In the various theories of coagulation the active coagulating principle of the blood platelets is called thromboplastic substance (Howell¹³), thrombokinese (Morawitz¹⁴), and cytozyme (Bordet and Delange¹⁵). Some workers¹⁶ believe the blood platelets to be a source of prothrombin. It is of particular interest that the red corpuscles apparently do not participate in the process of coagulation. Bordet and Delange¹⁵ found that a fluid rich in leucocytes did not greatly assist in the process of coagulation. Lee and Vincent¹⁷, on the other hand, found that suspensions of leucocytes were as active as suspensions of platelets in assisting coagulation. However, Lee and Vincent point out that the platelets outnumber the leucocytes 50 to 1 and that the platelets rapidly gather in large numbers in any break in continuity in the vessel wall. Furthermore, the blood of birds (which contains leucocytes but no blood platelets) can be preserved without clotting if uncontaminated by tissue juice¹⁸. It is evident, therefore, that of the formed elements of the blood the blood platelets alone play any considerable part in coagulation.

It is impossible to mention even briefly the many theories as to the precise action of blood platelets in coagulation. A resumé of our work, both published and unpublished, may be given. Our work has been based on the study of the coagulation of blood in

many normal and pathological conditions both clinically and experimentally. We have isolated the blood platelets in these conditions by the use of our own modifications^{17 12} of Mosen's¹⁹ original technic. If blood is taken into any substance that inhibits coagulation, as oxalate, there is little difficulty in obtaining an incoagulable plasma which on centrifugation separates into two main layers. One finds the red cells below and a yellowish, more or less cloudy, plasma above. Between these two main layers is a thin white layer called the buffy coat. This buffy coat is composed mostly of blood platelets with a few leucocytes. The upper layer of plasma when carefully obtained will be cloudy and on powerful centrifugation this cloudy plasma will become clear and there will be a sediment of blood platelets. For the process of coagulation the blood platelets from the buffy coat or from the sediment of the prolonged centrifugation of the supernatant cloudy plasma essentially free from red cells act equally well. However, the blood platelets from these two sources are not equally suited for the microscopic study of the behavior of blood platelets. The blood platelets in the supernatant plasma are usually clumped and have evidently undergone some transformation. This may also be true of the blood platelets of the buffy coat, but it is our experience that a goodly number of platelets, sufficiently unaltered for satisfactory microscopic study, is best obtained from the buffy coat in carefully prepared specimens. There seems to be a strange failure among workers in this field to appreciate how easily the blood platelets are altered in handling and how much this alteration of the blood platelets affects all of the coagulating substances in the blood.

Lee and Vincent¹⁷ have shown that by extremely careful technic it is possible to secure a plasma whose clotting time on the addition of the optimum amount of calcium is increased several fold over the clotting time of plasma obtained by the usual technic. The difference can easily be shown to be due to almost inevitable alteration and to some extent at least to the solution of the platelets under the usual technic. Therefore most careful technic must be used in securing blood platelets for study and frequently many specimens must be discarded before a satisfactory suspension of blood platelets can be secured. The activity of blood platelets in whole blood has been studied by Deetjen and others. Deetjen²⁰ observed that the phenomena of agglutination and fusion or transformation of blood platelets into glassy-like masses occurred with the onset

of the first signs of fibrin strands in blood. We have repeatedly made the same observations. Whenever coagulation first begins the platelets can be observed to have undergone this metamorphosis, but at this same time, even in the same test tube, wherein there is no coagulation, there is no fusion of platelets. We have investigated this problem further by adding suspension of platelets to different blood fractions. Under the influence of those substances derived from plasma which participate in the first stages of coagulation, this transformation of platelets occurs. This occurs most vigorously under conditions in which we assume that there is a considerable rearrangement of the various protein molecules of the blood, particularly when fibrinogen is being altered or after defibrination, when the resulting fluid contains calcium. We were inclined to believe at first that the transformation was due to thrombin or thrombin and calcium, but by means of Howell's pure thrombin we have found that this is not the case.

From these observations we are inclined to make the deduction that the blood platelets play a very important role in initiating coagulation. Apparently blood uncontaminated by tissue juice will not clot as long as the blood platelets are intact. With sufficient alteration in the blood platelets or some portion of them, either from some physical change or from some substance given off by the blood platelets, the phenomenon known as coagulation begins and the development of that phenomenon is associated with further changes in the blood platelets, which then assist in the progress of coagulation.

It can be easily shown that the active principle of coagulation residing in the platelets, while insoluble in salt solution, is soluble in strong saline solution or in distilled water. Such solutions of blood platelets assist in coagulation in the same manner as the blood platelets. Unlike most of the other active coagulating substances, the blood platelets can be subjected to considerable heat (boiling for 15 minutes) without seriously affecting their activity in promoting coagulation.

The activity of the blood platelets, however, does not stop with the production of coagulation. After coagulation the clot in normal blood tends to retract. Hayem²¹, Duke²², and others²³ have demonstrated clinically that the intensity of the reaction of the clot is exactly parallel to the number of the blood platelets. Bordet and Delange¹⁵ and Lee and Vincent¹⁷ demonstrated the same thing in

vitro. The latter studied microscopically a clot greatly retracted by an excess of platelets and found strands of material resembling fused conglomerate platelets and apparently perfectly preserved platelets as well. Solutions of platelets, tissue juice, and platelets either altered or destroyed by anti-platelet serum do not cause retraction. LeSourd and Pagniez²³ found that only emulsions of organs containing actual platelets caused clot retraction.

This phenomenon of clot retraction is often a valuable test of the presence of abundant active platelets in a given blood. In certain conditions the platelets are diminished, but still coagulation takes place within reasonably normal limits. Apparently it is the excess of platelets over what is required for coagulation, that are available for clot retraction, since the platelets participating in coagulation presumably largely go into solution. Hence a normal coagulation and a normal clot retraction beginning within an hour and well marked in 24 hours indicate normal platelets in normal numbers. A normal coagulation time and a non-retractile clot indicate normal platelets in markedly diminished numbers. A prolonged coagulation time with normal clot retraction indicates platelets in normal numbers, but some change either in activity of the platelets or in some of the other coagulating elements.

There are in particular two pathological conditions which can now be attributed to abnormalities of the platelets, namely, purpura hemorrhagica and hemophilia.

Purpura hemorrhagica is a symptom complex. This symptom complex occurs not infrequently in pathological conditions. Under such conditions it should be denominated as secondary purpura hemorrhagica. However, there is a fairly definite disease entity which is perhaps appropriately classified under the name of primary purpura hemorrhagica.

Purpura hemorrhagica primary or secondary has as its predominating abnormality greatly diminished blood platelets. The relationship of purpura hemorrhagica and diminished blood platelets was first recognized by Denys in 1887. Since that time a number of case reports and reviews have been published, which have been well summarized by Duke²² and Frank²⁴. The latter calls the condition "die essentielle Thrombopenie," or the idiopathic paucity of platelets, in many ways a more desirable name than purpura hemorrhagica.

Running parallel with the diminution of platelets the symptoms of purpura and bleeding from mucous membranes occur. When the platelets get below sixty thousand per cmm. purpura is extremely likely and when the platelets are under ten thousand per cmm. purpura and bleeding from the mucous membranes are almost certain to occur. In association with the diminished platelet count there is always a marked tendency to bleed from small cuts. This well known tendency for bleeding is utilized as a test that is known as the bleeding time²². The test in its simplest form consists essentially of pricking the ear with a needle and noting the time required for the bleeding to cease when the blood is blotted at regular intervals. Normally bleeding stops in about three minutes. When the platelets are greatly diminished the bleeding time will be prolonged several times over normal. When the platelets are twenty thousand or under the bleeding time will be at least forty-five minutes. The coagulation time in purpura hemorrhagica is usually not greatly prolonged. The simple explanation for this condition which at first sight seems somewhat surprising is that the very few blood platelets present are all used up and coagulation of a certain proportion of the fibrinogen of the blood takes place. This takes place essentially in normal time. With a normal blood practically all of the fibrinogen would be clotted at this point, but usually in the blood of purpura hemorrhagica, if the first clot is removed, subsequent clots will be formed slowly for a considerable period of time. This re clotting phenomenon confirms our actual experiments with the blood platelets in purpura hemorrhagica, namely, that there are very few blood platelets, but the blood platelets themselves are normal. The blood platelets act to produce partial coagulation, thus giving the coagulation test a normal time, but true complete coagulation is probably much delayed. As a rule in severe cases of purpura hemorrhagica complete coagulation probably does not occur. Consequently one gets the characteristic soft, flimsy clots. Retraction of the clot, of course, does not occur in purpura hemorrhagica. The substitution which occurs clinically in purpura hemorrhagica of a soft non-retractile clot for the normal tough retracting clot is undoubtedly a very important factor in the continuance of the hemorrhages in purpura hemorrhagica.

The essential nature of purpura hemorrhagica is unknown. We do see purpura hemorrhagica secondary to sepsis and occasionally in the course of typhoid fever or of acute tuberculosis. Then, too, certain poisons, as benzol, produce the clinical picture of

aplastic anemia with secondary purpura hemorrhagica both in the laboratory animal and in man accidentally poisoned in industry. Any process which reduces the number of blood platelets will in general tend to reproduce the symptom complex of purpura hemorrhagica. Thus we may see the essential symptoms of purpura hemorrhagica in certain stages of pernicious anemia with a low platelet count or in any disease involving the bone marrow which may diminish the production of the blood platelets. Whatever the origin of this symptom complex, purpura hemorrhagica, whether due to bacterial toxins or to poisons or to encroachments of the bone marrow by abnormal tissue or of unknown origin, one inevitably finds the same association of the reduction of blood platelets, namely, purpura, tendency to bleed from mucous membranes, prolonged bleeding time from tissue puncture, normal or slightly delayed coagulation time often giving the re clotting phenomenon, and a non-retractile clot. When purpura hemorrhagica is of unknown origin the process of its production may be at least two. In the first place it is possible to assume that the blood platelets are produced in normal numbers but that they are very rapidly destroyed. To substantiate this supposition we have the production of purpura hemorrhagica experimentally by anti-platelet serum, with a marked reduction of platelets in the circulating blood but without much effect on the parents of the platelets, the megakaryocytes of the bone marrow. Lee and Robertson¹² by the use of the anti-platelet serum were able to reproduce all of the features of the disease entity purpura hemorrhagica. Furthermore, similar clinical cases are described and the appropriate pathological findings in the bone marrow have been seen in a few cases. The other supposition as to the method of production of certain forms of purpura hemorrhagica is on the basis of aplasia. This aplasia may be essentially specific and affect only the megakaryocytes of the bone marrow or it may be more general, and in this case one sees purpura hemorrhagica approaching the clinical entity known as aplastic anaemia. In these latter cases the pathological findings are those of aplastic anaemia, namely, the substitution of fat for the normal marrow elements. As Minot points out there are probably all gradations in the aplastic process, from a general uniform aplasia of all the bone marrow elements to an almost specific aplasia of the megakaryocytes. A possible explanation is that this unknown agent may when relatively weak attack only the circulating platelets and that it is the same agent in greater concentration that actually causes

the atrophy of all the bone marrow elements. There are some clinical facts which may be interpreted in support of such a theory.

The occurrence of this symptom complex, purpura hemorrhagica, is not rare. The cases of both primary and secondary purpura hemorrhagica are not uncommon in the general clinic. The primary cases are often confused with hemophilia. The secondary cases are often described as the hemorrhagic type of the original condition, as in typhoid fever. It is true that one sees hemorrhagic types due to other causes, but purpura hemorrhagica secondary to a number of diseases should be readily diagnosticated. In addition there seems to be a clinical type of purpura hemorrhagica of unknown origin. Some of these cases are apparently congenital, and there even seem to be in some cases a family tendency. We have watched two of these cases with varying but always diminishing platelet counts and the corresponding symptoms of purpura and bleeding for a number of years.

If our experience is a criterion, purpura hemorrhagica is usually not recognized. As has been pointed out the recognition depends on the enumeration of the platelets, by counting or estimation in stained films, and by testing the biologic activity of the platelets by the bleeding time, coagulation time and reclothing phenomenon, and failure of the clot to retract. Of course, it must be emphasized that we do not understand the mechanism of the production of purpura, and various forms of purpura occur in which so far as we know there is no abnormality of the platelets either in numbers or in activity. Purpura simplex, various drug purpuras and the purpura associated with acute infectious arthritis all present platelets in normal numbers and of normal activity.

The prognosis of the purpura hemorrhagica symptom complex depends on the etiology. If it is secondary to a known disease, with the removal of the cause, recovery is possible. For example, purpura hemorrhagica when occurring in the course of typhoid fever may be quite transitory and clear up spontaneously. In the cases of benzol poisoning, unless the blood platelets are replaced repeatedly until the megakaryocytes regain their activity death usually results. However, in both typhoid fever and benzol poisoning it is usually possible to supply platelets until the temporary effects of the respective poisons have subsided. However, in the cases of purpura hemorrhagica of unknown origin, the prognosis as far as we know seems to be eventually bad. Minot²⁵ carefully studied one case in which the platelets alone seemed affected and in which transfusion

was done a dozen times. In a recent case of aplastic anaemia with secondary purpura hemorrhagica in which all the bone marrow elements were involved and in which study of bone marrow showed atrophy of all the elements, repeated transfusions were performed. Both cases died. In other words, a supply of normal blood platelets may be added, but since the life of the blood platelets is only about four days, the supply must be constantly renewed in case the patient is rapidly destroying them or is unable to manufacture them from his own bone marrow.

Since purpura hemorrhagica is intimately associated with a diminution of platelets and since all of the symptoms are due to platelet deficiency, the rational treatment consists of an attempt to supply the platelet defect. It frequently happens that tissue juice from any source, from fresh raw beef for example, is of great value when applied locally to a bleeding mucous membrane in this condition. As we have already pointed out, for the purposes of coagulation, tissue juice and platelets can be used interchangeably. The activity of tissue juice in accelerating coagulation has long been recognized²⁶. The tissues of any animal contain an abundance of this active coagulating substance. Howell¹³ in particular has worked with an active coagulating substance derived from tissues, kephalin. Hess,²⁷ Cronin,²⁸ Hirschfelder²⁹ and others have elaborated Howell's idea and have pointed out the value of extracts of tissue when applied locally in various bleeding conditions. In the ordinary hemorrhages of the nose and throat the application of tissue juice obviously ensures the presence in abundance of one of the important elements in coagulation. In purpura hemorrhagica tissue extracts either as crudely prepared extracts of convenient tissue or in the form of Howell's kephalin or in any other form are often of value when applied locally. The same is true of the substance known as coagulen, which has been frequently described by Fonio and Kocher and Fonio.³⁰ This coagulen merely consists of the same active principle that occurs in platelets or in tissue juice. These substances when given subcutaneously seem occasionally to be of definite but of transitory value. They may be given intravenously, but when so given they are not of more than temporary value at best and not entirely without danger, and hardly to be compared with the value of the unaltered blood platelets as obtained by transfusion. Many attempts have been made to secure blood platelets unaltered for purposes of intravenous injection. Each manipulation causes the loss of large numbers of blood plate-

lets and so far it has not been possible to secure platelets in adequate numbers for intravenous injection. Therefore, in general we are compelled to rely upon the usual methods of transfusion. As a rule transfusion of whole blood is desirable in these conditions because there is usually a loss of blood from hemorrhage as well as the specific loss of blood platelets. In order to be effective, it is necessary to transfuse relatively large amounts, that is at least 600 cc. A simple calculation based on general averages readily shows that the transfusion of 600 cc. of blood will only increase the blood platelets by about 25,000 per cmm. in the recipient.

In transfusion it goes without saying that the usual precautions as to isoagglutination, etc., should be observed³¹. As far as we have been able to determine the blood platelets do not share in the four isoagglutination groups that one finds with the serum and red blood corpuscles. Our experiments in the test tube indicate that there is no essential difference between the blood platelets of the various groups. Furthermore, the clinical experience of an accidental cross transfusion in a case of purpura hemorrhagica showed that while the donor's red cells were completely destroyed, not only were the donor's blood platelets not destroyed, but they acted just as effectively in stopping the pathological hemorrhage and in reducing the bleeding time as the transfused blood platelets of a blood in the same group as the recipient. The behavior of the bleeding time in purpura hemorrhagica is very striking after transfusion. Within a few minutes after transfusion the bleeding time is normal. The gradual return of the bleeding time to the marked pathological level corresponds very closely to our conception that the life of the blood platelets is about four days. Since it is to be expected that the transfused blood platelets are of varying ages, so the bleeding time rises in a progressive curve in daily observations.

We have had little personal experience with the injection of fresh or well preserved serum or defibrinated blood. These procedures are highly recommended in some reports in the literature. They presumably depend mostly on the presence of thrombin. Serum may also contain some of the active coagulating principles of platelets. Their beneficial effect is at best temporary. But the use of serum subcutaneously may be useful in emergency.

There is one other pathological condition associated with hemorrhage which concerns an abnormality in the blood platelets. This condition is that interesting condition known as hemophilia. It has been shown that hemophilia is a pathological condition of males,

apparently always inherited, but inherited only through females.

The condition seems to be present from birth, but there is some ground for believing that there are considerable fluctuations in the intensity of the disease. We have recently subjected hemophilia to very careful study.³²

In brief, our conclusions were that in typical hemophilia there is an hereditary defect in the blood platelets. This defect consists of a slow availability of the platelets for the purposes of coagulation. In hemophilia there are blood platelets in normal or often in slightly increased numbers. Unlike purpura hemorrhagica, in which the blood platelets are normal in their activity but greatly diminished in numbers, the blood platelets in hemophilia are normal in numbers but abnormal in their activity. We are able to show that the blood platelets of hemophilia were remarkably slow in assisting in the formation of thrombin. Eventually, the hemophilic platelets form the normal amount of thrombin and cause the normal retraction of the clot.

In hemophilia a large number of workers have shown that there is no essential abnormality of any of the other coagulating elements. The failure hitherto to recognize the defect in the blood platelets which we were able to point out can easily be explained by certain considerations which we discussed earlier in this paper. These considerations involve mainly the fact that the blood platelets are easily altered by manipulation and the fact that extraordinary precautions must be taken if blood platelets are to be isolated in a condition closely approximating their natural condition in the blood. We were able to show that blood platelets in hemophilia carelessly handled or even preserved in salt solution for any length of time were sufficiently altered so that their activity approached to a greater or less degree that of normal platelets. But the slowness of fresh hemophilic platelets in the formation of thrombin could be contrasted in a striking manner with the rapidity of the action of fresh normal platelets.

The symptom complex in hemophilia corresponds closely to this peculiarity of the blood platelets. The coagulation of blood, provided the blood is taken as it always should be taken from a vein, is markedly delayed, often as long as an hour, in contrast to the normal controls of about eight minutes. The slow formation of thrombin is shown not only by the marked delay in the coagulation time but also by the same reclothing phenomenon observed in purpura hemorrhagica. In the latter case the platelets are few but normal,

so that coagulation begins in normal time but is slowly or perhaps not entirely completed. In hemophilia the slow availability of the platelets renders the formation of thrombin slow. The beginning of coagulation is much delayed and likewise coagulation is slowly completed. But coagulation is always completed and finally all the fibrinogen is clotted, giving a tough clot. This clot retracts normally. Clinically during hemorrhage from a hemophiliac one often observes the belated appearance of soft, flimsy clots which eventually, in the course of hours perhaps, become tough and firm and retract. However, the bleeding time tends to be normal.

In other words, the admixture of tissue juice supplies the defect of the platelets. In case the puncture is deep and a vessel is injured thus giving a relative excess of blood to be clotted over the small amount of available tissue juice the bleeding will be abnormal. It is notorious that hemophiliacs do not have purpura, do not bleed from small punctures but do bleed from deep cuts and have spontaneous hemorrhages into joints, from the kidneys and mucous membranes. The hemophiliacs are particularly prone to bleed after injuries or operations on mucous membranes, since in the mucous membranes there is relatively little tissue juice and an excess of blood.

The direct therapeutic indication in hemophilia is exactly that as in purpura hemorrhagica, namely, the supply of normal platelets. Likewise, locally, tissue juice, kephalin, thromboplastic substance or coagulen may be used with marked benefit. As in purpura hemorrhagica the internal administration consists preferably of transfusion. One of our cases of hemophilia was transfused under the usual precautions. His coagulation time before transfusion was 150 minutes; immediately after the transfusion of 600 c.c. of blood the coagulation time was normal. This time gradually lengthened and was 100 minutes 5 days after the transfusion. These observations support not only the supposition that the platelets are at fault, but also that the life of the platelets is a matter of a few days.

While it is not possible, of course, to repeat the transfusion so frequently as to render the blood of a hemophiliac permanently normal, it is undoubtedly possible by transfusion to arrest any particular hemorrhage in the hemophiliac, particularly when the bleeding cannot be stopped by the local application of blood platelets or of the allied substance from tissues. It seems also perfectly feasible that under the conditions of repeated transfusions an operation which under usual circumstances would be extremely hazardous can be performed with safety.

Kephalin, coagulen and allied substances are perhaps of slight temporary value when given subcutaneously. When given intravenously (not always without risk) these substances may shorten the coagulation time rather markedly for a day. It often happens that the patient with hemophilia goes along for months or years without a hemorrhage. When the hemorrhage occurs even a temporary shortening of the coagulation time may again put him on his former level of a symptomless delayed coagulation time. Consequently the injection of serum or of defibrinated blood, although at best of temporary and not marked effect on the coagulation time, may be well justified.

Many substances have found great favor in the treatment of hemophilia. Calcium, gelatin and many others are warmly endorsed. We have never found that these substances affected either the coagulation time or the course of the disease. Many cases are regarded as cases of hemophilia which are only normal traumatic or operative hemorrhage. The study of the blood, as we have indicated, will, with but rare exceptions, sharply differentiate hemophilia from other conditions. Furthermore, in the estimation of the value of any therapeutic procedure in hemophilia, it must be borne in mind if blood tests are not made that hemophilic blood tends eventually to clot even if very slowly and that each patient with hemophilia usually has a history of many hemorrhages which ceased.

We have studied various other conditions with abnormal coagulation with especial reference to the blood platelets. These studies are by no means complete. We³³ have, for example, shown the blood platelets to be entirely normal in the delayed coagulation which is often seen in obstructive jaundice and that the defect in this condition is in some instances partially and in other instances wholly a deficiency in available calcium. A few observations on hemorrhagic disease of the newborn have shown the blood platelets to be present in normal numbers. On account of the obvious scarcity of material we have as yet been unable to test the activity of the blood platelets.

In severe anaphylactic shock there is frequently a markedly delayed coagulation. Lee and Vincent³⁴ found that there was usually present a marked deficiency in platelets. This deficiency could be demonstrated by the usual staining methods. This deficiency could be compensated for in the test tube by the addition of normal

platelets or tissue juice. The clot in the blood of anaphylactic shock does not retract.

Other observers have attributed a very important role to the blood platelets in the production of anaphylactic shock. von Behring³⁵ and others hold the blood platelets responsible in part or entirely for the symptoms of anaphylactic shock. Some of these observers, as Pardi,³⁶ attribute the lung conditions and the lung symptoms in anaphylactic shock to the clumping of the blood platelets. In our own studies on the possible increase of blood platelets in certain organs in anaphylactic shock, we were unable to convince ourselves of any increase in the lungs or brain such as suggested by Pardi and von Behring. While it is possible that the blood platelets play an important part in the causation of the symptoms of anaphylactic shock, we are inclined at present to adhere to the more conservative view that the disappearance of demonstrable blood platelets in the anaphylactic blood, with the resultant prolonged coagulation, is merely an associated condition of severe anaphylaxis. In mild experimental anaphylaxis we found no changes in the blood platelets or in the coagulation time. In certain clinical cases best considered of anaphylactic nature, we have observed a delayed coagulation time. We have been unable thus far to associate this delay with any abnormality of the blood platelets.

Another condition which has been considerably studied, particularly by Lee and Vincent,³⁴ is the condition of prolonged or absent coagulation of the blood due to leech extract or hirudin. In blood taken into leech extract outside the body, the leech extract itself, especially in concentrated solution, acts as an anti-coagulant and can be demonstrated in the test tube to inhibit the action of thrombin. In the animal experiments an incoagulable plasma was obtained and the blood platelets were nearly absent by the usual methods. Yet altered and clumped platelets can be demonstrated in the blood. This change is apparently not permanent, since the normal coagulation of the blood is gradually restored. It is possible, then, to attribute in a certain measure at least the change in the coagulation of blood with leech extract to a very definite effect upon the blood platelets.

After certain peptones are injected a much delayed coagulation time is found, apparently due to some bodily changes induced by some impurity in the peptone or some unusual form of peptone. In this condition clumping of blood platelets in the blood and internal organs has been described in the literature.^{7 35} Besides the clumping

of platelets there is a marked increase in the antithrombin of the blood.

Thus far we have spoken entirely of the effects of a diminution of blood platelets or of a decreased or suspended activity of the blood platelets.

Mention should be made of the role of the platelets in the formation of a thrombus. It is well known that the typical white thrombus is composed almost entirely of blood platelets. Furthermore, it has been shown repeatedly that the insertion of a ligature through a blood vessel of an animal will usually result in the agglutination of large numbers of platelets. This agglutination may result in the formation of a typical and extensive thrombus. The peculiar characteristics of the blood platelets are particularly adapted to thrombus formation. The blood platelets are very "sticky" elements and will always be found adherent to any roughness. A needle or a glass cannula through which blood is passed will be almost literally coated with blood platelets. In working with blood platelets they are always found adherent to the test tubes with which one works. It is our belief that this tendency for the blood platelets to adhere to any object and to each other is an important factor in the first step of coagulation. The use of an anti-coagulant like oxalate or bile, not only makes the blood incoagulable but in a sense, because coagulation is prevented, fixes the blood platelets and certainly minimizes this natural adhesive quality. It is this quality of the blood platelets which favors coagulation, that is nullified to a considerable extent by paraffining tubes or vessels when one desires to keep the blood from coagulating as long as possible. It is certainly very attractive to believe that a very important factor in preventing intravascular clotting is the smooth endothelial lining of the blood vessels which does not favor the tendency of the blood platelets to collect. The blood platelets will collect about any injury of a vessel wall caused by trauma or infection. In our study of thrombosis and phlebitis we have not yet been able to attribute any more than their usual activity to the blood platelets. Certainly the blood platelets have not been constantly markedly increased. Perhaps, however, we do not possess the necessary delicate methods to demonstrate an increase in their activity. There is one condition which is an exception to this statement and which at least suggests the possibility that in some of the varied conditions associated with thrombosis and phlebitis we may find an altered and presumably increased activity of the blood platelets. The exception to which we refer is the fre-

quency of thrombosis of the peripheral veins after splenectomy⁹ ¹⁰ and perhaps particularly in pernicious anemia in which splenectomy has been frequently performed. Thrombosis is a rare occurrence in pernicious anemia. After splenectomy thrombosis is common in the peripheral veins. Some additional cases present symptoms which suggest the presence of thrombosis of some of the smaller veins of the mesentery. In a considerable series of cases we have studied the relation to the blood platelets to these thromboses. After splenectomy the blood platelets are increased and not infrequently may be increased even over normal. What may be of especial significance is the observation that these blood platelets occurring after splenectomy are very definitely of somewhat different morphology than ordinary blood platelets.

In our studies⁹ the thromboses after splenectomy always paralleled the high tide of blood platelets. While thrombosis did not always occur in the increased platelet counts after splenectomy, nevertheless, it never occurred if the platelets were not greatly increased over their usual number in the particular patient. We do not presume that the increased numbers of fresh active platelets did more than make the thrombosis easily possible. The exact cause was doubtless some factor connected with some other abnormality, as infection, trauma, etc. Nevertheless, we consider it rather striking that thrombosis and abnormally high platelet counts were so often associated after splenectomy, and we believe that the increased numbers of platelets are an important contributory cause. This complication of thrombosis after splenectomy occurring at the height of the blood platelet increase may be fatal.

We have attempted to array a formidable list of indictments against the blood platelets in the causation of disease. Any substances that are but little known are often considered to be of no or of very great significance. So the blood platelets have from time to time been considered to be of no importance on the one hand and as participating in every essential function on the other. There are probably few functions in which it has not been suggested that the blood platelets participate. Concerning these we cannot speak at first hand. Some workers³⁷ attribute to the blood platelets considerable importance in the variations of blood pressure. Recently some rather startling observations have been made tending to show the enormous role of the blood platelets in the complicated mechanism of immunity.³⁸ Some workers would have us believe that there are different forms of blood platelets capable of differentiation by stain-

ing methods which participate in the immune reactions of the different diseases.

These observations obviously require confirmation.

We have tried to sketch in bare outline the importance of the blood platelets, one of the three formed elements of the blood.

We have tried to show their importance from a clinical point of view as an indicator of activity of the bone marrow.

We have pointed out the important role of the blood platelets in the normal process of coagulation.

We have discussed pathological conditions arising from a disturbance of the blood platelets.

Two sharply differentiated conditions, purpura hemorrhagica and hemophilia are caused by disturbances of the blood platelets.

Various other conditions are at least associated with important alterations of the blood platelets.

The study of the blood platelets ought to be a part of the routine investigation of most cases and certainly of all cases associated with changes in the blood.

The blood platelets can be easily studied in stained smears and by counting. Their numbers and activity can be estimated by deductions from observations of the bleeding time, the coagulation time and the reclothing phenomenon and clot reaction.

We are convinced that hitherto the significance of the blood platelets has not been generally appreciated, nor have the methods for the study of the blood platelets been adequately utilized.

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CONGENITAL MEGA-COLON (HIRSCHSPRUNG'S DISEASE)

By C. A. HAMANN, M. D., Cleveland

The essential feature of Hirschsprung's disease is congenital dilatation of the colon, in whole or in part, usually associated with hypertrophy of the intestinal wall, and elongation of the bowel; there is primarily no obstruction of the lumen, and in this respect, the condition, which is probably a manifestation of giant growth, differs from the eccentric hypertrophy of the colon that occurs as a result of mechanical obstruction, such as is seen in certain forms of atresia ani, etc.

A description of two clinical cases and of a specimen taken from a cadaver will afford an opportunity to briefly describe the symptoms, pathology and treatment of the affection.

Case 1.—R. G., a boy of 15 years, was referred by Dr. L. G. Knowlton, with the complaint that the patient had great difficulty in evacuating the bowels and that there was marked enlargement of the abdomen. The following history was obtained:

From earliest infancy he had been constipated; no bowel movement occurred without cathartics or an enema. At the age of 8 or 9 years prominence of the abdomen was noticed. He was quite apathetic at times, looked sallow, felt badly and lacked energy. For some two months prior to admission to the hospital he had had no fecal evacuation. He had attacks of prostration at times, with rapid and feeble pulse. His appetite was fairly good; there was no pain, dyspnoea or vomiting.

The diagnosis was apparent at a glance. The abdomen was much distended, particularly on the left side, the outline of the colon showing quite distinctly; occasionally there were visible peristaltic movements. In the pelvis and lower abdomen was a mass, perhaps five or six inches in diameter, of almost stony hardness; this was obviously a fecal tumor. The lower rectum was not dilated and a fecal mass could be felt upon digital examination, though the finger did not come in direct contact with it because a fold of the bowel intervened. (This fold or kinking of the bowel is one of the features frequently encountered and is a result of the dilatation and elongation of the gut and the accumulation of fecal material; it is furthermore of importance in connection with the surgical treatment as will be pointed out below.)

The upper abdomen was tympanitic. The heart was displaced to the right and upward, lying between the sternum and second and third ribs. The lower posterior border of the lungs was about at the seventh intercostal space, the lower anterior border about at the nipple line. The subcostal angle was very obtuse. No abnormalities, except those of position, were found in the heart and lungs; the urine was normal.

It was decided to try to evacuate the large intestine with cathartics and enemas, but very slow progress was made with these efforts. Upon one occasion, after the administration of a cathartic, the patient's pulse became very rapid and feeble and he was almost in collapse; this has been observed in numerous recorded cases and indeed death has occurred in such attacks. The mechanical interference with the heart's action, together with the toxic effects of material absorbed from the intestine may account for such phenomena.

In order to prepare him for colectomy, it was decided to first establish an artificial anus, which would allow a more thorough evacuation of the feces and thus diminish the size of the mass to be removed. Accordingly on March 10th, 1916, at Charity Hospital, the abdomen was opened through the left rectus muscle. The sigmoid colon filled the entire lower abdomen and pelvis; it was four to five inches in diameter, and contained much fecal material; the wall of the gut was quite smooth and no taenia coli could be seen, the greatly hypertrophied longitudinal muscular fibres being spread out uniformly over the bowel. The sigmoid was stitched to the parietal peritoneum over an area one and one-half inches in diameter, and a few days later was opened. Through the opening we then started to remove fecal material; quarts of it were dug out with a spoon, aided by irrigation; a mass larger than an orange remained, even after a month of almost daily effort to cleanse the bowel. With the evacuation of the fecal matter, the boy's general condition improved considerably, and on April 13, 1916, a little over a month after the preliminary colostomy a second operation was done for the purpose of removing the enlarged part of the colon.

The artificial anus was first closed, then the abdomen was opened through the former incision. The large intestine was divided at about the middle of the descending colon where the gut was about normal in size, and was then pulled out of the pelvis, i.e.,

straightened as much as possible so as to "take up the slack," after which it was divided about five inches from the anus; at the lower point of division the bowel was three inches in diameter. There was still quite a mass of fecal matter in the portion of sigmoid removed. The ends of the bowel were closed and a lateral anastomosis made on the left side of the rectum, opposite the valve-like fold which had been felt per anum. The remaining portion of the large intestine was normal in calibre.

Recovery after this operation was uninterrupted; the first evacuation of the bowels occurred on the fifth day.

At the present time (February, 1917) the boy is quite well and there are regular bowel movements, without the use of cathartics or enemas.

An examination of the wall of the resected intestine shows that the inner (circular) muscular layer is about twice as thick as the outer (longitudinal layer), both being greatly hypertrophied; there is no marked increase in the amount of fibrous tissue.

A second case is the following: Boy, aet. $2\frac{1}{2}$ years, referred by Dr. I. Goodman. Complaint: Obstinate constipation since early infancy, and enlargement of the abdomen. The child's general health was good. An X-ray examination showed marked enlargement of the sigmoid flexure. The pre-operative treatment consisted in lavage of the bowel for three or four weeks; no preliminary colostomy was done in this case.

On September 5, 1916, at the City Hospital about 10 inches of the large intestine, comprising mainly the sigmoid flexure were removed, the ends of the bowel closed and a lateral anastomosis made.

The child died of peritonitis at the end of a week.

An interesting associated condition was found in this case, namely, a marked enlargement of the bladder; this has been observed in a number of recorded cases, and is what might be expected to occur, inasmuch as the bladder is formed from an outgrowth (allantois) of the hind-gut.

At about the time that these cases were under observation an instance of Hirschsprung's disease was found in a dissecting room subject, and I am kindly permitted by Prof. Todd to show the specimen.

The subject was a male, aet. 31 years; cause of death acute dilatation of the heart. The ampulla of the rectum and the sigmoid

are enormously dilated, being 12 inches in circumference; the ascending portions of the colon are normal in size, as are also the flexures; the transverse colon and coecum are 4 to 5 inches in diameter. (This variation in the size of different portions of the large intestine has been frequently observed in Hirschsprung's disease, dilated and hypertrophied portions alternating with normal portions.) The appendix was normal in size. (In only two of the recorded instances of megacolon was the appendix enlarged.)

The large intestine is the exclusive seat of Hirschsprung's disease, though only in rare cases is the entire colon involved; the sigmoid colon is the part most frequently affected, and if other parts are also enlarged, normal portions alternate with the enlarged portions. In cases of hypertrophy of the bowel due to obstruction as atresia and there is seen a gradual diminution of the hypertrophy as one proceeds upward from the seat of obstruction. Furthermore, as mentioned above, there is no obstruction, primarily in Hirschsprung's disease, and the kinking of the bowel with the formation of valve-like fold into the lumen, is a secondary acquirement. The size of the bowel may be enormous, cases having been recorded in which the circumference was from 50 to 70 cm. The dilatation is associated with a thickening of the wall, involving chiefly the circular muscular coat, though the longitudinal fibres are apt to be thickened also, and the other components of the intestinal wall may participate, even the nerves and vessels. The length of the large intestine is apt to be increased. The taenia coli and the sacculations of the affected part disappear giving rise to a smooth appearance of the gut—the interior is also smooth; the epiploic appendages may be missing. Secondary changes, due to pressure by the fecal masses occur, and ulceration, perforation, and volvulus have been observed. The other viscera are of course displaced in various ways and the thoracic cavity may be encroached upon, giving rise to pulmonary and cardiac symptoms; the lungs may be crowded into the extreme upper portion of the thorax.

The contents of the distended bowel consist of fecal material of varying consistency and gas; large hard fecal concretions are met with, alongside of which the more liquid feces pass; generally a foul odor is the result of the protracted stagnation and decomposition of the fecal material.

An important part of the pathological anatomy of megacolon is the occurrence of kinking of the bowel, with the formation of a

valve-like fold projecting into the lumen; this probably occurs in the majority of cases and has a decided bearing on the symptomatology and also the treatment. This kinking occurs most commonly at the junction of the sigmoid (pelvic colon) and rectum, i.e., at the transition of a movable with a fixed portion of the gut and the accumulated fecal material in the dilated segment pressing against the narrow portion leads to compression of the latter and thus to interference with the passage of feces.

Symptoms and Signs. The affection is about three times more common in males than in females and has been found at birth, though usually it is not detected till later; however, in most cases, the symptoms appear in early infancy.

Constipation is the first disturbance to attract attention, the meconium being evacuated with great difficulty, and is often only passed after the use of enemas. In an instance mentioned by Osler there were only five or six spontaneous bowel movements in the first eight months of life. As a result of the retention of feces, large fecal tumors which may be hard are apt to form; cathartics fail to remove these and more fluid intestinal contents pass between them and the intestinal wall; these fecal tumors can be felt through the abdominal wall and per rectum. By rectal examination one can frequently detect in older children a valve-like fold of the mucosa, the result of kinking of the bowel. Spasm of the sphincter has also been observed. Distension of the abdomen is the next evidence that attracts attention, and may reach an enormous extent; along with this are seen peristaltic movements, particularly in older children. Pain is usually absent, though in a few recorded cases it was very severe.

Vomiting does not occur as a rule.

As a result of the great abdominal enlargement the thoracic viscera are displaced upward, as mentioned previously; respiration is thus impeded and is purely costal in type. The cardiac impulse may be as high as the second or third intercostal space. There may be marked cardiac weakness as a result of the mechanical displacement of the heart and of the impairment of the myocardium due to absorption of toxic materials from the intestinal tract. Feebleness and rapidity of the pulse are met with and sudden death in collapse may follow exertion, after unusual distension or straining or vomiting or during operation.

Distension of the superficial abdominal veins and oedemas of

the lower extremities occasionally occur, as may also renal disturbances from pressure on the ureters.

Colitis associated with pain, fever, diarrhoea and emaciation may supervene and become fatal, or perforation of the bowel with peritonitis may end the scene. Disturbances of the nervous system manifesting themselves by general apathy, muscular twitchings, tetany, convulsions and unconsciousness may be encountered.

In a series of 35 unoperated cases collected by Neugebauer the mortality was 75%, only four reached the ages of 10, 12, 20 and 28 years respectively.

The diagnosis of the affection need not be further considered here, as the descriptions of the symptoms and of the cases cited will suffice; needless to say important information can be obtained by an X-ray examination.

Treatment. In young infants it is obvious that non-operative treatment only is suitable; nursing should be continued as long as possible. The constipation is to be treated by enemas, as cathartics are usually unavailing; permanent drainage of the rectum, by means of a rectal tube which is allowed to remain for days or weeks is advocated by Goeppert. The results of non-operative treatment are, however not encouraging; temporary improvement may occur, but a cure is uncommon; only two out of 133 cases collected by Neugebauer recovered permanently after internal treatment.

The operative treatment that has proven most satisfactory is resection of the enlarged bowel with particular care that the angulation or kinking of the colon is done away with. Preliminary treatment by lavage is advisable, as is also in many cases the establishment of an artificial anus to allow of evacuation of the fecal material. Resection may be done in several stages, as follows: (1) Delivery of the loop of bowel and formation of an artificial anus. (2) Removal of the bowel. (3) Division of the spur. (4) Closure of the artificial anus (Neugebauer).

Neugebauer: *Ergebnisse d. Chir. und Orthopäd.* 1913, VII, 598.

A CASE OF HODGKIN'S DISEASE, INVOLVING THE STOMACH

By STANLEY P. REIMANN, M. D.

From the Departments of Pathology of the Medical School of Western Reserve University and of the Lakeside Hospital, Cleveland, Ohio

The following case of Hodgkin's disease is one in which there was general typical glandular enlargement and in addition the more unusual feature of stomach wall involvement and ulceration without evidence of disease in the walls of the intestines.

In the seven cases of gastro-intestinal involvement collected by Wells and Maver¹ in 1904, and including their own as the eighth, ulceration of the stomach mucosa occurred in three instances and in none in which there was an histologic examination made (3 cases), was there involvement of the muscularis. The stomach wall was thickened and thrown into folds in seven cases, in one case there were small raised nodules. The average age of the patients was about fifty years.

Since 1904 there have been four cases of granulomatous involvement of the stomach walls reported, in three of these the diagnosis was in doubt; they are probably not cases of Hodgkin's disease. That of Celler² was in a man of 48 years old who died after an operation for intussusception. He had noticed glandular enlargements in the groin and neck for about a year previously. At the autopsy the stomach was studded with elevations of 1 mm. to 1 cm. in diameter, the larger ones projecting into the cavity of the organ. The mucosa was thinned over them but not ulcerated. Peyer's patches were involved as well. Histologically the cellular infiltration of the stomach wall consisted almost entirely of densely packed lymphoid cells in the submucosa with a few in the mucosa. The muscle was free. Lymph nodes presented the same picture, but in addition there were giant polynucleated endothelial cells and a few eosinophiles but no fibrosis. The diagnosis of this case may be "alymphemic lymphomatosis"; it does not present the picture of Hodgkin's disease. Hoffman³ found an involvement of the stomach during an operation which he describes as a hard cherry sized resistance. Many pea to bean-sized lymph nodes, not very hard, were found in the mesocolon. Histologically one of these showed a simple hyperplasia. The patient returned one year later, was operated upon and many small tumors palpated in the intestines. Nothing

abnormal was felt in the stomach. Autopsy was not permitted. Shoemaker's⁴ case is probably to be classified as an aleukemic leukemia. The patient was 28 years old. At autopsy the stomach walls showed nodules the size of peas. Histologically they showed round cell infiltrations.

The case of Scott and Forman⁵ falls under the head of Hodgkin's disease. The type of involvement in their case was that of thick walls, the mucosa measuring six to fifteen millimeters. There were a "few shallow erosions resembling ulcers". Histologically the infiltration was found in the mucosa and consisted of the type as found in Hodgkin's disease. No mention is made of the muscularis.

The patient, the subject of this communication, was a boy 14 years old, who entered Lakeside Hospital complaining of pain in the lower thoracic region on the left side. Family history was negative. He had had no other illnesses except measles. He always breathed thru his mouth but remembered no tonsillitis and no coryza. Two weeks before admission while running, he was seized with a pain in the precordium, mild at first, but steadily increasing until in a week's time he was compelled to go to bed. Exertion, even walking, increased the pain. No other symptoms, sore throat, chills, fever, or dyspnea were present.

Physical examination showed an undernourished and underdeveloped boy. Head, ears and eyes, nose, pharynx and tonsils were negative. The submental lymph nodes were very slightly enlarged, the post cervicals considerably so, hard, discrete, painless, varying from about 3 mm. to 5 or 6 mm. in diameter. The lung showed an increase in tactile fremitus at the right base posteriorly. Breath sounds were elevated in pitch at both apices, more so at the left. A diminution in resonance at the right apex was found. Heart was slightly enlarged to the left. A systolic murmur was heard over the pulmonic area. The spleen was just palpable and the edge of the liver could be made out on deep inspiration.

Numerous blood counts were made. On admission his hemoglobin registered 70%, the erythrocytes 4,640,000 and the leucocytes 17,000. The hemoglobin and red cells steadily diminished during the course of his disease, falling gradually thru 60%, 50% to 18%, and the red cells to 440,000. The white cells showed a distinct increase above normal, 17,000, 16,000, 15,500 and 10,400 the day of his death. At first the red cells showed no morphologic changes, but gradually more and more polycromatophilia, anisocytosis and

poikilocytosis were noted; nucleated reds were found. In all the counts made there was an increase in the number of platelets. Differential counts showed constant increase in the transitional cells, as for example counts made on March 27th showed:

Polymorphonuclear neutrophiles	71.6%
Large Mononuclears.....	7.6%
Small Mononuclears	8.7%
Eosinophiles	8.4%
Basophiles	1.6%
Transitionals	9.0%

On the 13th May: .

Polymorph. Neut.	68.5%
Large Mononuclears	4.0%
Small Mononuclears	13.0%
Eosinophiles	0.5%
Basophiles	0.0%
Transitionals	14.0%

Two days before death:

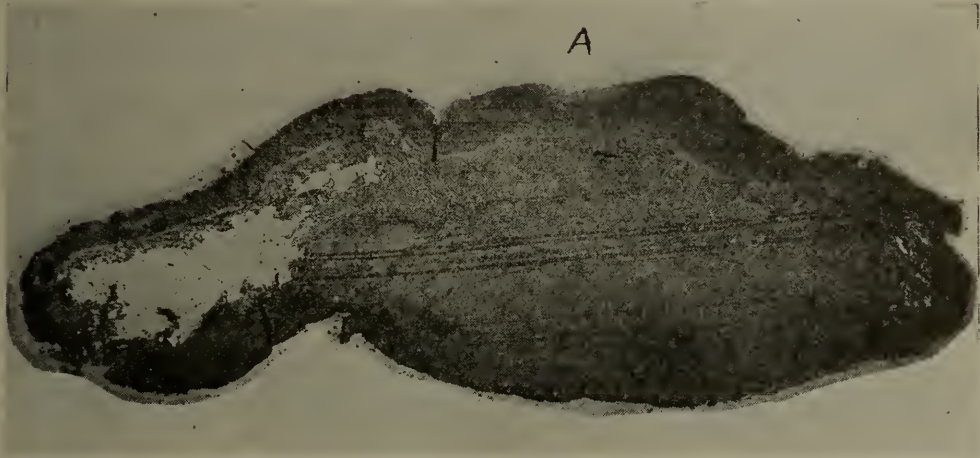
Polymorph. Neut.	73.0%
Large Mononuclears	5.6%
Small Mononuclears	12.5%
Basophiles	0.0%
Transitionals	7.7%

A von Pirquet cutaneous test was negative. Blood culture as well as cultures from the lymph nodes yielded no growths.

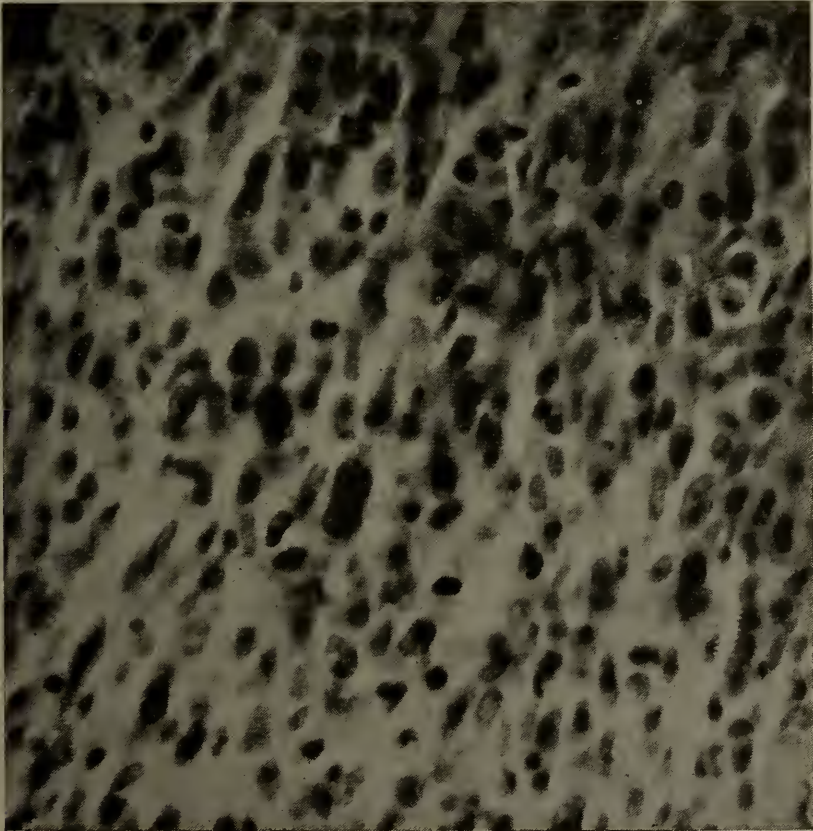
A small lymph node was excised from the neck surgically and showed the histologic appearance of Hodgkin's disease.

The patient received X-ray therapy and cacodylate of sodium hypodermatically, but the cervical lymph nodes enlarged steadily, dyspnea and an increasing area of dullness over the sternum evidenced mediastinal growth and severe abdominal pain with tenderness and free fluid ensued. He died five months after admission.

An abbreviation of the autopsy report gives the following findings: The body of an underdeveloped, somewhat emaciated boy. The skin had an icteric tint, especially about the face and neck. Superficial cervical lymph nodes both anteriorly and posteriorly were palpable, the posterior groups the larger. There was slight edema of the feet, ankles and scrotum.



Photomicrograph 7 diameter magnification, showing invasion of mucosa, and at A slight superficial erosion, also invasion of submucosa and of muscularis.



Photomicrograph, 4 mm. lens, of a detail of mass in stomach wall, showing varied types of cells characteristic of Hodgkin's disease.

Section showed that the mesenteric and mediastinal lymph nodes were enlarged, hard and discrete. There were a few recent fibrinous adhesions between visceral and parietal pleura on both sides and an excess of clear, straw-colored fluid in the left pleural cavity. There was a large amount of clear straw-colored fluid in the peritoneal cavity.

The heart and aorta were normal. The left lung except for a few fibrinous adhesions between lateral visceral and parietal pleura was normal grossly as were the upper and middle lobes of the right lung. The middle lobe of the right lung was much fibrosed. The bronchial lymph nodes on both sides were enlarged and hard and showed considerable anthracosis. There was a slight catarrhal bronchitis.

The liver showed small amount of periportal fibrosis with fatty degeneration.

The spleen weighed 325 grams, was firm with a nodular feel, reddish purple. Capsule was thickened over the entire surface and showed numerous irregularly rounded fairly firm, red and yellow nodules projecting thru. They varied from 2 to 25 mm. in diameter and on section were well circumscribed, the peripheries were red and the centers yellow. The organ, cut with increased resistance, was dark reddish purple in color, the follicles were distinct, the pulp did not scrape away, no apparent increase in fibrous tissue. The same nodules were scattered thru the cut surface.

The kidneys showed moderate cloudy swelling. Intestines contained a small amount of fecal material. Walls were not thickened, mucosa normal. Peyer's patches and the solitary follicles were nowhere prominent.

Stomach was not dilated; it contained a small amount of brownish yellow mucus. The mucosa was somewhat congested at the cardiac end and there were four well circumscribed, very small punched-out ulcers, the edges of which were raised above the general surface and somewhat rolled in.

Lymph Nodes: Those from the cervical mediastinal, mesenteric, aortic and inguinal chains were firm; grayish yellow, discrete, the normal architecture was apparent on section in a few, the surface was homogeneous, dry grayish yellow in most; lymph follicles could be made out in a few.

Histologically the middle lobe of the right lung, the liver and

the septa of the pancreas showed cellular and fibrous tissue infiltration similar to the pictures in the lymph nodes. The spleen showed marked fibrosis with cellular infiltration, mostly lymphocytes, and large diffuse hyalinized areas.

Lymph Nodes. In most of these the normal architecture could not be made out. Several distinct pictures were present. Closely packed endothelial cells, with a few lymphocytes and strands of connective tissue made up the entire picture in some, remains of lymph follicles with great hyperplasia of the endothelial cells and moderate fibrosis in others, endothelial hyperplasia and numerous giant cells in others, and in still others fibrosis predominated. The endothelial cells were moderately large for the most part, polygonal, and had pale polychromatophilic scanty cytoplasm; some few had more deeply stained cytoplasm. The nuclei were large, rounded, many being polygonal, all vesicular, lightly stained, many showed mitotic figures and a few showed evidences of direct division. There was scattered phagocytosis of red blood cells, pigment and debris. The lymphocytes in some nodes were very scanty, in others diffusely scattered and in a few herded together, in follicles. Eosinophiles were few in number; they were numerous in the nodes which showed giant cells. In the nodes in which endothelial hyperplasia was predominant, there were few giant cells, in those showing endothelial hyperplasia and scattered lymphocytes, they were quite abundant, from two to three or four times the size of the endothelial cells, with a scant lightly basophilic cytoplasm, and numerous heavily stained deeply vesicular, lobulated nuclei. The fibrous tissue existed as diffuse fine fibrils with large spindle-shaped nuclei in some nodes, and broad bands of older type coursing in irregular ways through the nodes in other instances. These large masses frequently showed hyalin change.

Stomach. The type of involvement was that of endothelial hyperplasia fibrosis and lymphocytic infiltration. The mucosa showed a small ulcerated area extending half way down to muscularis mucosae with irregular steep edges and a small amount of debris on the surface. Fairly well localized to an area about 1 cm. across were seen the endothelial cells and lymphocytes streaming from the submucosa and muscularis, invading between the glands in a dense closely packed, diffuse manner, compressing and distorting the architecture of the glands. Fibrosis was more evident in the submucosa and muscularis where it existed as fine diffuse fibrils and

as more closely packed strands. The endothelial cells and lymphocytes replaced muscle bundles and invaded the lymphatic channels, following them very closely. The type of endothelial cell was the same as that of the lymph nodes, and the lymphocytes presented the usual picture. Very few of the giant cells were present and fewer eosinophiles. The edges of the infiltration were quite sharp and with the exception of short prolongations into the lymphatics channels, ended abruptly. On either side a normal stomach wall was seen. A search for bacilli in Gram-Weigert preparations resulted unsatisfactorily, a few broken rods were found which could not be identified as organisms.

The unusual anatomic features of this case of Hodgkin's disease lie in the involvement of the stomach wall without involvement of the intestinal-tract and in the invasion of the muscular coat. In spite of definite ulceration there were no symptoms referable to the stomach. The patient is the youngest of the cases of this type on record.

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- ⁴Shoemaker, H. Pseudoleukemia gastro-intestinalis; *N. Y. Med. Journ.* Vol. 91, 1910, 11.
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Calcified Hematoma.—Under this title F. C. Kidner, Detroit (*Journal A. M. A.*, Jan. 20, 1917), describes a case of bone formation in a muscle occurring after an injury, and accounts for it as due to a break in the periosteum, and a hemorrhage occurring from this and from the torn muscle fibres above it. The deep layers of the periosteum responded to the stimulus of trauma by pouring forth osteoblasts. These were free to wander through the mass of hemorrhage, which in the case described occupied only the deepest layers of muscle tissue. A relimiting fibrous tissue membrane was formed preparatory to the absorption of the blood clot and on this membrane and in its meshes were lodged the free bone forming cells and bone growth began in all directions. If the hemorrhage had been deeper in the muscle or the tear in the periosteum had been smaller, it is easy to see how the connection between the two might have been obliterated in a short time and the bone growth been inclosed entirely within the muscle body.

MECHANICAL DEVICES IN TREATMENT OF FRACTURES OF THE LONG BONES*

By F. P. CORRIGAN, M. D., Cleveland

If a wound or fracture of a long bone has healed according to our desires the cicatrix is bone. While this is desirable for all bones, it is particularly so for the long bones on account of their supportive function. The study and application of definite mechanical principles is absolutely necessary in order to secure restoration of function which implies anatomical restoration and bony union. In other bones connective tissue union may do as well, but not in the long bones. Therefore, accurate mechanics must be our dependence. We cannot "take a chance" or trust to nature. As Billroth said, "The *vis medicatrix naturae* is a better physician than surgeon."

I shall consider briefly the established principles to which the devices under consideration must conform. We may take it for granted that wherever there is a prodigious number of apparatus and bandages, abundance is synonymous with famine, and the particular condition that seems to be best taken care of by variety of devices is the very one which presents the unsolved problem. Every fracture is an emergency case. There are many good reasons why broken bones should be reduced as soon as possible; both subjective and objective reasons, it is easier for the doctor and better for the patient. When the injury is recent the muscles offer less resistance, the patient will submit readily to manipulation, extension is easier before the inflammatory effusion supervenes and we may avoid the necessity of an anesthetic. Besides prompt and accurate coaptation, which is sometimes possible, assists in bringing about haemostasis by more perfect contact of the vascular orifices of the interosseous vessel or their better compression. Apposition of the divided periosteum and the confrontation of the divided osseous surfaces is the best means of guaranteeing union. This in fact describes an ideal reduction, seldom obtained, always to be striven for and seldom possible except in an early reduction. Therefore one of the most desirable qualities for a mechanical device for treatment of fractures is that it may be quickly and easily applied. Its further merits may be gauged from the standard of whether it helps or hinders in our approach to the ideal reduction. In general it may be said that all the devices used in the treatment of fractures of the long bones

*Read before The Cleveland Academy of Medicine, Feb. 16, 1917.

divide themselves into two classes: (1) Devices for applying extension to the broken limb; (2) Devices for controlling the position of the fractured ends with relation to one another, and so securing and maintaining apposition. Of the two requirements of treatment thus indicated, the first is the more important because it is the first step and is fundamental. Properly applied extension—as for instance a Buck's extension on a broken thigh, does more than simply correct over-riding. Bardenheuer, of Cologne, has shown that the extending force acting through the skin and muscles, and especially the intermuscular septae, exercises just as definite a corrective action on the upper fragment as on the lower, so that the fractured bone is swung as in a hammock that has been pulled taut.

This tendency toward reduction by extension alone, however, is usually relative, and we must then resort to the second class of devices—those for controlling the position of the fractured ends with relation to one another. A plaster-of-paris dressing put on while the limb is extended attempts, sometimes successfully, to be a combination of the two ideas in a single device. In certain fractures it accomplishes this beautifully and is the ideal dressing. An entire volume might be filled with descriptions of extension apparatus for fractured femur alone, proving therefore, that the problem has not yet been solved, and I have had the temerity to add yet another to the myriad, and of its merits you may judge. The devices for controlling the fractured ends may be subdivided into two classes: (1) Those which are applied to the outer surface of the limb in the closed or usual methods of treatment; (2) Those applied directly to the bone in the open or operative methods of treatment. The first class includes splints, pads, sand bags, and the like, and also the valuable rotary and perpendicular extension apparatus of Bardenheuer, which have not been enough studied or appreciated in this country. The second class acting directly on the bones, includes sutures, wires, plates, bands, nails, pegs and grafts. An addition to this class has recently been made by Dr. Allen, of Indianapolis, in the pins which I will demonstrate. Of these various devices the autogenous bone graft undoubtedly represents the greatest advance. The future treatment of fractures, at present in a hazy and formative state, will crystallize along the line of greater attention to the extension principles laid down by Bardenheuer for the closed treatment, and wider use of the bone graft as against metal devices for the open treatment.

VACCINE TREATMENT OF CEREBROSPINAL SYPHILIS

By O. P. BIGELOW, M. D., Cleveland,
Visiting Neurologist to the Cleveland City Hospital.

The antisyphilitic remedies known at present have been found so ineffectual in the treatment of paresis and in some cases of tabes and earlier nervous involvement, that we must continue to search for other means of combating these diseases. A field of investigation which has received but little attention of late is that of increasing the defensive powers of the body against the spirochaeta. Kraepelin, in the eighth edition of his "Psychiatrie," reviews the various attempts which have been made along this line, especially in cases of paresis. They include: The artificial production of suppurating wounds, intravenous injection of tuberculin, of sodium nucleinate and of lecithin; the attempt to produce an antiserum by injecting horses with serum from paretics or with the "bacillus paralyticans" of Robertson and McRae; and the injection of serum from paretics in a state of remission. These methods have all been discarded as ineffectual.

Theoretical

The treatment here reported was prompted by the following considerations: First, in all the later manifestations of cerebrospinal lues there is a chronic, circumscribed, inflammatory process, the type of inflammation in which vaccines have been most successfully employed. Second, the entrance of spirochaetae into the blood stream, in early stages of the disease at least, causes the formation of antibodies, evidenced by the appearance of the Wassermann reaction; and these antibodies are successful in combating the particular strain of spirochaetae which provoked them, shown by the spontaneous disappearance of secondary lesions. Third, there are probably various strains of spirochaetae, those which cause the lesions of paresis and tabes being different, due to the long struggle for existence in the body of the host, from the ones which were present in early stages of syphilis; so that if vaccines are to be employed they should be autogenous or at least prepared from spirochaetae occurring in the same stage of the disease. Fourth, in the cases under discussion the most accessible spirochaetae which fulfill the conditions mentioned above are those contained in the patient's own spinal fluid.

Theoretically, the previous administration of potassium iodid should assist any vaccine action which might occur for two reasons. First, because in breaking down granulation tissue it renders it more permeable to substances circulating in the blood, and second, because in breaking down this pathological tissue it probably liberates more spirochaetae into the spinal fluid to be included in our vaccine, just as the cell count in the spinal fluid is increased by the iodid treatment.

Also, judging from our experience with vaccine treatment of lesions elsewhere in the body, if we can produce a condition of hyperemia in the diseased organ it will probably increase the action of the vaccine. It is generally agreed that an intraspinous injection such as we have been giving for therapeutic purposes produces this effect; so that an intraspinous injection a day or two before the administration of the vaccine will probably increase any action which it might have.

Work Done

Following out these ideas it was decided to inject intravenously the patient's own spinal fluid, previously inactivated by being heated to 56° C. for one-half hour. In some cases potassium iodid was given for a time beforehand, and an intraspinous injection of salvarsan, neosalvarsan or diarsenol was given at the time that the spinal fluid was obtained. The fluid should, of course, be collected in perfectly clean tubes and be shaken before being injected.

Since May, 1916, a total of 20 injections have been given in 16 patients, nine of tabes and seven of cerebral syphilis. I have not had an opportunity to try the treatment in paresis.

From 15 to 30 c.c. of spinal fluid was used. No subjective symptoms were complained of following the injections. The leukocyte count in the blood showed no significant change after the injection in three cases; but in three others, all of whom had been on large doses of potassium iodid for over a week previous to the injection, the leukocyte count was about doubled, 14 hours afterward.

As to the clinical results, it has not been thought prudent to deprive these patients of the ordinary methods of treatment, so that one cannot say how much of their improvement may be due to the intravenous injection of spinal fluid; but they have all shown at least ordinary improvement.

Conclusion

My series of cases is yet too small to determine definitely whether any clinical benefit is to be expected from the procedure; but it seems evident that no harm is to be expected from it.

Possibly some other observers, especially those who have control of this class of patients in state hospitals over a long period of time, may be induced to give it a more thorough trial.

407 Osborn Building.

Pyorrhea.—H. E. Potter, Chicago (*Journal A. M. A.*, Feb. 10, 1917), says that roentgenography in pyorrhea alveolaris does not differ in its technical plan from that used in other procedures intended to shed light on diseases in the jawbones. The constant feature of the disease making this possible is the ulceration in the presenting margins of the alveolar processes and the more intimate bone about the roots. No such rigid technic is necessary in pyorrhea as in the demonstration of periapical disease, in which foci of minor decalcification must be detected. But in any pyorrhea case some of the changes about the roots showing deeper encroachment are important and the most critical roentgenography is required. Potter gives the appearances that must be looked for. Whether the line limiting the ulcerated process can be followed or not, it will usually show plainly in the region of the septal bone. There are limitations to the value of the Roentgen ray which are also mentioned, and a very important point in the diagnosis may be entirely undemonstrable, namely, the activity of the disease at the time of examination. A general survey of the denture by a series of dental films is an important adjunct of a pyorrhea case, and often a short cut to a diagnosis, but should supplement rather than displace other diagnostic methods. The most important diagnostic points are seen in the region of the intimate bony investments of the roots and are obtainable only from the most critical roentgenograms.

Medical Care Under Health Insurance.—How physicians, hospitals and medical science will be brought more effectively to the service of the sick workers under universal health insurance is explained in a pamphlet just published on "Medical Organization Under Health Insurance" by Dr. Alexander Lambert, New York, Chairman of the Social Insurance Committee of the American Medical Association.

The full co-operation of physicians and public health officials all along the line, Dr. Lambert points out, is provided in the standard bill for health insurance prepared by the American Association for Labor Legislation and now before the legislatures of several States.

"In any large health insurance scheme," says Dr. Lambert, "a huge and intricate machinery is necessary and physicians are an essential part of this machinery. The service rendered by the medical profession must be on a business and not a charity basis. Sickness is an economic calamity for which the members of the community are responsible in varying degrees, and for which the whole community pays. The greatest economic asset that a workman possesses is the health that enables him to go to work each day. If he loses that, he loses his power of earning his living."

The pamphlet covers thoroughly every aspect of the proposed system involving the medical provisions, with charts to illustrate the organization of medical care. The writer invites comment and criticism that will be helpful in working out the plan in each State in justice to employers, employees and physicians.

REVIEW OF THE PROGRESS OF MEDICINE

By HAROLD FEIL, M. D., Cleveland

Acidosis in Acute and Chronic Disease. *Channing Frothingham, Jr., Arch. Int. Med., 1916, XVIII, 717.*

Definition: Acidosis is applied to a variety of conditions in which there is a general impoverishment of the body in bases or substances which readily give rise to bases (Sellards). The acid-base equilibrium of the blood is due to its powers of absorbing acids or alkalis with little change in its own reaction. This stability of the reaction of the blood is due chiefly to the sodium salts of carbonic and phosphoric acids. The carbonates are the chief agents in this work. Upon the blood taking up acid the carbonates effect neutralization—the carbon dioxide being liberated through the lungs and the blood carbonate content being thereby reduced. In like manner the phosphates are involved—the product—an acid phosphate is eliminated through the kidneys. Henderson defines acidosis as an abnormal diminution in the amount of these buffer substances in the blood.

Clinical Evidences of Acidosis.

(1) Stimulation of respiratory center with consequent increase of ventilation of lungs. Detected in mild cases by measurement of CO_2 content of alveolar air—which will be found below normal. In severe acidosis the deepened respirations with increased rate characterize the symptom-complex (hyperpnea without cyanosis).

(2) Increase of quantity of acid excretion in urine—therefore a larger quantity of alkali by mouth is necessary to render the urine alkaline (not found in acidosis of kidney disease—because of renal impairment).

(3) Ammonia in urine is increased due to its formation from protein to serve as a base in the acid neutralization. *The acid bodies* in starvation, in diabetes mellitus, in surgical anesthesia are the Ketone bodies. In nephritis and in the severe diarrhoeas of childhood retention of acid phosphates has been found.

Methods of Detection of Acidosis:(1) *Direct blood examination:*

a. Studies on CO_2 content of the blood show it to be decreased in acidosis (Van Slyke's method).

b. Studies on the hydrogen ion concentration of the blood show a decrease in the alkalinity of the blood.

c. Oxybutyric acid is increased greatly in acidosis of diabetes.

d. Acid phosphates are increased in blood of chronic nephritics.

(2) *Urine examination:*

a. Presence of acetone, diacetic and butyric acids merely show that abnormal acids are present in the blood—but give no indication of the quantities.

b. Increase of ammonia nitrogen percentage of total N.

c. Hydrogen ion concentration of urine increased.

(3) Alveolar air examinations for determining the CO_2 tension. Decrease of the CO_2 is found in acidosis.

(4) Determination of the quantity of sodium bicarbonate taken by mouth or intravenously which is necessary to render the urine alkaline to litmus. In the normal individual four grams of sodium renders the urine alkaline. Two, three or four times this amount or more will be required in cases of acidosis (not of value in cases of cystitis—where the reaction of the urine is altered after excretion by kidney).

In an extensive report Frothingham gives his results in the various methods for determining acidosis—Alveolar air CO_2 tension; ammonia nitrogen percentage of total nitrogen; hydrogen ion concentration and test for acetone in urine; sodium bicarbonate by mouth test.

Results:

1. Syphilis (3): tests fell within the normal limits.

2. Epilepsy (2): no evidence of acidosis between attacks.

3. Diabetes—five of six cases showed acidosis in all tests except H ion concentration of urine. Such wide variations were found in cases reported in this series that the results were of little value.

4. Exophthalmic goitre (9). No evidence of acidosis found.

5. Primary anemia (8). No appreciable acidosis.

6. Chronic nephritis (6). Four cases showed evidence of acidosis by the alveolar air test and the soda tolerance test.

7. Pneumonia (15). The results varied—some cases showing some degrees of acidosis.

8. Acute articular rheumatism (18). All patients were taking sodium salicylate during the period of observation. Frothingham

concludes "that some form of acidosis occurs in certain of these cases of acute rheumatism, which shows up in one or another of these tests, but not consistently in any one."

9. Subacute nephritis (3). No evidence of acidosis.

10. Lung abscess (2). No acidosis.

11. Gastric cancer (2)). Some suggestion of acidosis in one case.

12. Addison's disease (2). The CO_2 tension of the alveolar air was just below the lower limit of the normal.

13. Cirrhosis of the liver (2). No conclusions could be drawn.

14. Chronic cardiac disease (in fair compensation while in bed). Except for a diminished CO_2 tension in one case and a slightly increased percentage of ammonia in another, there was no coincidence of acidosis.

15. In a series of chronic cases—varied and not conclusive studies were made.

Conclusions:

1. The study of the hydrogen ion concentration in the urine is not reliable as an index of acidosis.

2. Diseases showing acidosis at times: Diabetes, chronic nephritis, pneumonia, acute articular rheumatism and several acute febrile conditions.

3. Diseases showing no acidosis: Exophthalmic goitre, epilepsy, syphilis, chronic cardiac disease, subacute nephritis and lung abscess.

4. Some suggestion of acidosis in the cases of primary anaemia, gastric cancer, Addison's disease, and hepatic cirrhosis.

5. Of these tests, either the estimation of the carbon dioxide tension in the alveolar air or the so-called soda tolerance test showed variation from the normal in all cases of acidosis. They also seem to be of value in detecting the degree of acidosis.

Technique of soda tolerance test: 5 gm. sodium bicarbonate given by mouth. At the end of two hours urine is collected and if still acid in reaction the dose is repeated. If the patient is unable to void the next dose is put off until the next urination. If the test is carried on through the night the patients are not aroused. It usually requires 5/15 gm. of soda to change the reaction of a healthy person's urine from acid to alkaline. The test is performed in the morning.

THE PROGRESS IN PEDIATRICS

By HUBERT C. KING, M. D., Cleveland

Hernias in Children. *A. J. Ochsner, The Surgical Clinics of Chicago, Vol. I, No. 1, 71.*

It is both interesting and of value to read the opinions of a surgeon of Ochsner's experience on what hernias in childhood require operative treatment. In all he thinks that only 7 percent of all cases of these hernias require operation. Cases which require operative treatment may be divided into six classes as follows:

(1) Cases that have a congenital deformity in which the muscles congenitally are not developed properly, a class of cases in which when you look at the abdomen you observe three distinct points of prominence. In this class there is a marked abnormality in the attachment of the internal oblique and transversalis muscles to Poupart's ligament, a condition which Dr. Ferguson pointed out as being practically always present in adults suffering from hernia. When this condition is marked the hernia will not recover spontaneously.

(2) Cases where every day or so the hernia goes down and the parents find it difficult to reduce it. Hernias which cannot be retained by any other method that may be employed and which show a tendency to strangulation. In some of these cases the hernia protrudes even when the child is in the Trendelenburg position and it is difficult to prevent its protrusion with the finger on the inguinal canal.

(3) Cases in which a strand of omentum has become attached to the hernial sac or in which there have been adhesions to one of the intestines, usually the cecum, so that, although the hernia is not strangulated, it cannot be reduced because of this adhesion.

(4) Cases in which the hernial opening is kept permanently open because of the presence of a hydrocele of the cord which slips in and out of the inguinal canal and prevents this canal from closing, and so, in turn, permits the hernia to protrude.

(5) Cases with undescended testicle with an inguinal canal that is so widely open that its spontaneous closure seems quite improbable.

(6) The last variety of hernia in children which requires an operation is the variety in which there is an irreducible strangulation.

Ochsner advises as treatment for the cases that do not require operation the removal of the cause if this can be found, as the cure of a phimosis, the removal of constipation with its consequent increase in intra-abdominal pressure, and the elimination of articles of food which cause gaseous distention of the intestines. He has found quite a series of cases in which the hernia healed spontaneously every summer and opened up every winter, because the children got colds, and in coughing opened the hernias. The removal of the tendency to these colds avoided the recurrence of these hernias.

About six weeks in bed with the foot elevated about 30 degrees, so that the mesentery has a chance to retract will cure many hernias. Children who cannot be confined to their beds are treated by allowing the children to be about during the day and by putting them to bed at 5 o'clock in the evening after an early supper.

Pyorrhea Alveolaris.—G. B. Harris, Detroit (*Journal A. M. A.*, Feb. 10, 1917), says that pyorrhea should be looked on as an infectious disease and treated as such. That means the building up of the resistive forces throughout the entire body, as it is difficult to see how the resistance can be raised in the gum tissues alone. This must be done, not only to throw off the present infection, but also to guard against its recurrence. The lowered resistance to the tissues surrounding the teeth is due in many cases to well known calcium deposits and the irritations caused by faulty dental work. Harris remarks on the wonderful recuperative power of the cementum. This is the bond between the teeth and the bone and under proper conditions it can reform after being cut in grooves or removed entirely from the root, provided a sufficient amount is left on the root to regenerate. The regeneration of the cementum must be the result of stimulation by the careful use of the affected teeth and an active blood supply. It can be encouraged by careful but not too diligent massage and the nonuse of astringent mouth washes. The teeth must be cleaned, not merely brushed. The bacteria commonly found in pyorrhea are constantly present in the mouth. If oral hygiene is practiced, their numbers are greatly lessened. If there is good resisting power in the individual, he is immune; but if it is lowered, pyorrhea follows quickly. In order to recover, that resistance must be regained. To prevent the formation of tartar deposits after they have been removed, Epsom salt is most efficient, as constipation plays an important part in their formation. There are a great many pathologic conditions which are credited to mouth infections, but it must be remembered that there are plenty of people with arthritis who are wearing full upper and lower dentures and had been doing so long before they had the arthritis. In such cases, therefore, while the existing pyorrhea should not be neglected, we should not devote our energies exclusively to it, as the real cause may be elsewhere. There are roentgenograms which show rarefied areas about the apexes of the roots that are rightly interpreted as being infectious foci, but there are plenty of others which show the same which are only relics of old ones which do not now exist.

VASO MOTOR AXON REFLEXES*

By JUSTIN B. WHELAN, Cleveland

In the course of countless ages the human body has been elaborated through external forces to a state of perfection marvelous in its adaptation to cosmic surroundings. Variations from the perfect model are all too common and although they are compatible with life, if not too extreme, they may seriously handicap the activities of the organism in pursuance of nature's primary impulse—namely existence. The how or why of the human form is not our question here, but once having developed that form, the primary impulse is to preserve it against the ravages of injury and decay, to repair, to keep in stable, constant equilibrium, all of which constitutes existence itself. So great is this impulse to return to an original specific form that in some plants and animals if only a fragment of the body be left it can reconstruct the whole. Even in man this tendency is adhered to with such tenacity that unbelievable strides are made in the attempt to return to normal, organs and tissues, which have been disarranged. In man like in all other organisms the life cycle consists of two different chains. One, the continuity of growth to the perfection of the form; the other, auxiliary or subservient to the first, the development of protective mechanisms which maintain and guard the life of the individual. These latter, however, constitute some of the characteristics of the species. Some of these defensive mechanisms are quite simple and apparent in their character. Thus the body is covered with a relatively impervious skin, reinforced in places by hair and nails. Our respiratory tract is lined with cilia which keep dust out of the lungs. The stomach ejects irritating substances by vomiting while other toxic substances are eliminated by diaphoresis and catharsis and so on. But still injuries occurring from mechanical, physical, or chemical causes—and from the invasion of living parasitic organisms, call forth certain reactions or responses which are, inflammation, fever, immunity production and repair. With only one of these, however, are we at present interested, namely, inflammation, and of this, only certain aspects.

Inflammation as MacCallum defines it is "a complicated vascular and cellular response which follows almost immediately upon the injury, and is adapted by bringing much blood to the spot and

*Read as part of a symposium before the sophomore class at Western Reserve Medical School.

pouring out its elements upon the injured tissues, to prevent the extension of the injury, hold in check the injurious agent, or even destroy it." In a loose and vascular tissue, the inflammation after an adequate injury comes on with a red flush accompanied by swelling, heat and pain. The redness and heat are due to the congestion of the blood vessels, the swelling to an accumulation of fluid, and pain from the nerve terminations. The response of a vascular tissue to injury can be followed anywhere near the surface of the skin but especially well, as Samuëll in 1895 pointed out, in an object such as the rabbit's ear where the blood vessels can be seen. These vascular responses to injury can be seen in their more minute details with a more transparent tissue such as the web of a frog's foot or a piece of mesentery, etc. In the classic experiment of Samuëll, one of the rabbit's ears was painted with croton oil while the sympathetic nerves to the other were cut. In both there was produced a dilation of the vessels but in the inflamed ear the spaces were uniformly red. If a needle was passed between the dilated vessels in the mechanically congested ear there was no bleeding from the puncture. On the other hand there was free bleeding from the puncture of a similar area in the inflamed ear from which he concluded that the capillaries were evenly dilated in the latter. In consequence of this he concluded that there was something different in the inflammatory dilatation of the vessels from that of the active arterial hyperaemia. Adami states that inflammatory hyperaemia is different from true, active or arterial hyperaemia and is best classed as *sui generis*. Meltzer and Meltzer in 1903 have supported this view by demonstrating that while adrenalin produces rapid contraction in simple vasomotor dilatation it is without effect in the case of inflammatory dilatation.

Here the question is asked how does inflammatory dilatation differ from simple vasomotor dilatation? What causes inflammatory dilatation? MacCallum agrees with the idea of Klemensievoicz who holds that the widening of the blood vessels is probably due to the complete paralysis of their walls in the actually inflamed areas. Adami in his work on inflammation states that "irritants, if themselves diffusible, or the diffusible substances developed while the irritants are within the tissues, are capable of two actions: One direct upon the vessel wall leading to vascular changes; the other through the wall upon the leucocytes, whereby emigration may be produced." The exact mechanism controlling this vascular phenomenon must be either a pure tissue response or due to a nervous

reflex. That it is not the former, may be demonstrated by the fact that if all the nerves to the part are eliminated by a local anaesthetic, the dilatation will not occur if an irritant be applied. It rests therefore that the mechanism governing inflammatory vascular dilatation must be of nervous nature. That this nervous mechanism does not depend upon influences from the central nervous system may be observed by section of the nerve supply to the region where the irritant has been applied. This may be attempted with the ear of a rabbit. If all the nerves are divided and the irritant applied, the four cardinal signs of inflammation occur in due time and are exactly similar to the vascular and inflammatory changes in the other irritated ear to which the nerve supply is intact. Thus we are led to believe that the vascular changes which accompany inflammation have no connection with the central nervous system. But we do know that the central nervous system is able to institute a condition simulating inflammation. Adami cites this in a person under hypnotic control, to whom it was suggested that a red hot iron was being applied to a certain area. Immediately the area became red and inflamed, but the inflammation differed from normal in that the exudate was not purulent in any degree. Again if in a rabbit the sympathetic nerves to one ear and the auricular nerves to the other be divided, dilatation in the former and constriction in the latter will be observed, due to the antagonistic action. If both of these ears be irritated, the ear in which the vaso constrictors have been cut, shows acute inflammation, while the ear in which the vaso-dilators have been cut, shows no hyperaemia. In this manner Samuella and Rogers have shown that the central nervous system may exert an influence or modify the course of inflammation. Thus we must conclude that the nervous control of the vascular phenomena of inflammation must result either from impulses of purely central origin or impulses of peripheral origin which latter, however, may be modified by impulses of central origin. Adami in contrast to this peripheral neurogenic control holds that "the endothelium of the capillaries is to some extent self regulative or neuro-muscular." But in view of the fact that dilatation does not occur upon irritating an anaesthetized area, it would seem to be of little importance in contrast to the purely nervous mechanism controlling inflammatory dilatation. Gustav Spiess gave the impulse to research along the question of the mechanism of vascular dilatation when, after many years' observation of the healing of wounds he came to the conclu-

sion, that the dilatation of the vessels, present in the primary stages of an acute inflammation may be regarded as "the result of a nervous reflex passing centralwards along the sensory fibres and peripheralwards along the vasodilator fibres to the smaller vessels causing their dilatation," or in other words an extra-spinal vaso-motor axon-reflex.

J. N. Langley in the *Journal of Physiology*, 1900, Vol. XXV, publishes an extensive article on axon reflexes, in which, however, he treats of pilo-motor reflexes, but mentions, however, having observed a vaso-motor axon-reflex. He states that "my observations on this point are too few to enable me to say definitely more than that a vaso-motor axon-reflex is obtained in the regions in which there is a pilo-motor axon-reflex." Minian Bruce prompted by the paper of Gustav Spiess, quoted above, attacked the problem in the laboratory of Hans Meyer in Vienna and in 1913 published an account of his experiments in the *Quarterly Journal of Physiology*. Minian Bruce seems to be the only one who has published anything on this subject and in consequence the following experiments and conclusions I quote exclusively from his paper on Vaso-Dilator Axon-Reflexes.

In his first experiment Bruce took a young healthy cat in whom both eyes were perfectly normal. Alypin was applied to one eye as a local anaesthetic. This drug was used because it affects only sensory nerve endings, while other drugs, such as cocaine, affect the blood vessels, which from the nature of the experiment had to be avoided. For producing an inflammatory reaction in this and his other experiments he used mustard oil as an irritant, which produces its effect in from 10 to 30 minutes and if unchecked lasts from 2 to 4 days. To resume, a drop of mustard oil was placed upon the conjunctiva of each eye. The left eye soon became swollen and red while the right, which was completely anaesthetized, remained normal. As soon as the effect of the anaesthetic passed off in the right eye, the irritant asserted itself, which was dispelled again by the application of alypin. This justifies us in assuming that inflammatory dilatation is a nervous reflex, which when the sensory terminations of the nerves are paralyzed does not occur. Is the path of this reflex cerebral, spinal, or peripheral?

The spinal cord of a healthy cat was severed. Two patches of skin were removed, one above the site of section, the other below. Mustard oil was applied to both of these areas, and in due time,

typical inflammation occurred in both. Evidently from this it is clear that the reflex path is of cerebral origin or direction.

The lumbar and sacral posterior nerve roots on the left side were then divided, and three patches of skin removed, one on the right side, another on the left below the lesion and the third on the left above the lesion. To all three were applied mustard oil and all three were observed to be equally inflamed. These results then discredit the idea that the reflex path may be spinal.

There remains then the question of the peripheral reflex. The fifth nerve which is entirely sensory to the eye was divided distal to its ganglia or origin, in a rabbit. The fifth nerve was chosen because section of the spinal nerves cannot be accomplished without injury to adjacent motor and sympathetic fibres. A drop of mustard oil was instilled in each eye and in a short period equal inflammation was observed in both the normal eye and the eye to which the nerve had been cut. If sufficient time were allowed to elapse for the peripheral fibres of the cut nerve to degenerate, an irritant then applied, it was found that while inflammation occurred in the normal eye no inflammation occurred in the eye to which the nerves had been cut. From these experiments it was concluded that the nervous reflex does not pass to the ganglia of origin, and does not occur at all if the peripheral terminations of the nerve have degenerated. Since this reflex is not cerebral, spinal, or central to the ganglia of origin it must be confined to the peripheral fibres. If we paralyze or allow these peripheral fibres to degenerate we find that the dilatation of the blood vessels does not occur. Bayliss in the *Journal of Physiology*, 1901, says that "it is doubtful if there is normally any considerable amount of tonic excitation of the vaso-constrictors of the limbs and this being so, reflex vascular dilatation must be produced, chiefly by vaso dilators and only to a small degree, if at all, by inhibition of vaso-constrictor tone. From this we infer that the sensory posterior fibres may conduct impulses in both directions. As to the nature of the peripheral termination of these fibres, the natural assumption is that the nerve bifurcates as it approaches the periphery, into two branches, one to the skin, the other to the blood vessels. Then the impulse originating in the skin would travel upwards as far as the bifurcation and then down (peripheralwards) to the blood vessel. Such a reflex path would not be affected by section of the spinal cord or section of the nerve roots or section of the nerve peripheral to its ganglion but would be

affected by degeneration of the nerve or by paralyzing the nerve endings by an anaesthetic.

The axon reflex in respect to vascular enervation is probably the chief principle of the mustard plaster, the "stand by" of the "Old Guard," which succeeded when other things failed and which even today is referred to as by no means a last resort. In tabes, where there is no vascular inflammatory change, the axon reflex probably plays an important part, in view of its conspicuous absence.

Interstitial Gingivitis.—M. L. Rhein, New York (*Jour. A. M. A.*, Feb. 10, 1917), says that infection of interstitial gingivitis is impossible in an individual otherwise well. The so-called dental organs considered as an end-organ tissue are specially liable to lose their immunity to infection. Pyorrhea alveolaris is a result of malnutrition plus infection and most frequently also plus irritation, and is greatly intensified if arteriosclerosis of the ultimate capillaries sets in. While all forms of pyorrhea must begin with some form of gingivitis, yet in this and succeeding stages they vary in clinical appearance and the variations point to the cause. When we can read these symptoms as well as we can the blue line of lead poisoning, great advance in the diagnosis of disease will be made. The systemic impairment that is the cause of the dental trouble progresses very slowly, and it is sometimes not possible to diagnose the cause until it has reached an advanced stage. Every dentist will confirm this statement of the variation of the mouth picture in different cases of pyorrhea. Some have no deposit on the roots and in some they are covered; in some the gum is abnormally dry and parched, and we have also the pale gum in contrast to the red, inflamed gum. In some cases there are pockets exuding pus and others not. Each different picture will always be found associated with one particular predisposing cause and it has been Rhein's good fortune with his experience to frequently direct the patient to the right treatment in the early stages of some serious ailment. The time will come, he says, when the particular malnutrition causing the given kind of pyorrhea will be the subject of discussion instead of the general subject as in the present. The prognosis of gingivitis must largely depend on the possibility of cure of the malnutritional factor, and the dentist studying these and other mouth diseases will have to be sufficiently educated in general medicine to conduct the case as are specialists in other lines.

Bad Teeth.—C. E. Smith, Akron, Ohio (*Journal A. M. A.*, Jan. 13, 1917), emphasizes the importance of dental disease as affecting the efficiency of a laboring man. In the past sixteen months he has made 30,000 mouth examinations, in 17,000 Americans and 12,000 foreigners. Ninety-six per cent of these need dental service, and only four per cent have clean, healthy mouths. Nine per cent are without cavities and could be made healthy, and the balance have all the pathologic conditions known to dentists. The danger from unhealthy mouths has been generally recognized, practically all contagious diseases being capable of transmission by this route. What one cavity means to the average laboring man is shown. The man has a diseased tooth with dead pulp, and an alveolar abscess results. The bacteria were carried there by the blood stream sent from some focus of infection, but if they are carried to the teeth they produce these blind abscesses. One way we can estimate the loss of efficiency due to toothache is in watching a piece-worker, and the loss of money to these men from this cause, he says, runs from \$3 to \$7 a week, besides the less direct results of tooth decay, imperfect mastication and digestive disturbances.

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EDITORIAL

SOME SUGGESTIONS FROM THE MEDICAL DEPARTMENT OF THE INDUSTRIAL COMMISSION OF OHIO, BY THE CHIEF MEDICAL EXAMINER

The number of reports of injuries filed with the Industrial Commission during the past year, as shown by monthly reports dating from January 1, 1916, to January 1, 1917, shows a gradual increase in the number of accidents reported ranging from

6,878 to 13,880. The total number of accidents reported during the year was 142,521. An interesting fact is shown by the monthly reports submitted from the claims department, in that March, August, September and November have greater number of accidents than other months of the year, the average being about 4,000 for each month. This same condition has also been noted in reports of previous years' work.

The annual report for the fiscal year of the medical department shows the number of files passed upon by the department in November, 1915, was about 7,500, and that for the month of October, 1916, more than 30,000 passed through the department. The work has gradually increased during the year to its present efficiency. In justice to the department it is to be noted here that the number of employes in the medical department is the same as in November, 1915. Numerous changes have been made to increase the work of the department during the year. Better medical fees have been allowed than in previous years, both to physicians and hospitals. A large number of old cases have been reopened on further medical proof of disability, compensation being granted and medical bills for service paid in a number of cases which were of long standing. The present rate of injury will no doubt continue, notwithstanding the fact that this year's work has shown a phenomenal increase over the past year of nearly 100 per cent. This increase can in part be ascribed to the increase in industrial activities in this country, due to the European war, and additional increase may be shown during the coming year, especially should the casualty company work of the State be turned into our department for adjustment.

Universal satisfaction among employers carrying State insurance has been noted during the year, which indicates that they must feel satisfied as to the manner in which their employes are protected, as well as with the other matters pertaining to State insurance.

Some changes in the work of the medical department are under advisement. Better medical fees with the revision of the present fee schedule will be submitted to the Commission within a short time for their approval, which we hope will further improve the care and treatment of industrial cases. Recommendation has been made to the Commission some time ago for the furnishing of suitable rooms with a modern X-ray equipment for the use of the medical department. Money spent in this equipment can readily be saved by the elimination of the X-ray work which is now being sent to local radiographers in the City of Columbus. An opportunity will thus be afforded to physicians in all parts of the State from points available to Columbus to refer those needing such service here for examination. The possibilities to be derived from the establishment and efficient maintenance of such a department in connection with the work of the Industrial Commission are difficult to enumerate in their entirety. The matter has been gone into sufficiently to know that a large amount of money can be saved to the State insurance fund and better service given injured employes if this equipment can be secured. It is to be hoped that this matter will receive sufficient co-operation so that it may be consummated by proper appropriation during this term of the legislature.

Another matter of great importance which I beg leave to suggest is the establishment, in connection with some suitable hospital in this city, of a department devoted to the care of injured claimants throughout the State who need further treatment of a special character to alleviate their suffering and remove the greatest possible amount of disability existing due to their injuries, and where such treatment is not possible in the community in which they reside. Numerous cases of this character have been examined during the past year and wherever possible such treatment has been secured. It would be of great advantage if such a department could be established in a central location so that such cases might receive this special attention as near at hand as possible. This department should be equipped and financed to the extent that the very best medical and surgical treatment could be given and able and efficient

medical service administered. There is a large and varied field open in this work at the present time and as years go by the work will accumulate. The merits of such work are indeed great. Large sums of money paid out in permanent partial disabilities from the State insurance fund without special treatment can thus be saved and the injured workman made a more useful working unit and a more valuable member of society. More than 150 such cases were treated and operated upon during the past year in this particular line of work. I might say further that such special work is frequently overlooked by the attending physician in Industrial Commission cases. I dare say the possibilities of further improvement in a number of cases is not even dreamed of by the average physician. It is to be hoped that the \$200.00 medical fund which is now in use, being so specified in the law, will be extended so that full medical attention can be given and paid for by those administering the affairs of the Industrial Commission under the Workmen's Compensation Law.

Better co-operation on the part of employers is also to be hoped for during the present year. There is a tendency on the part of not a few employers to neglect or overlook the filing of the preliminary notice of injury, especially in injuries of minor importance where there is no period of disability or where the same does not exceed seven days. It is thus difficult for physicians to secure payment for medical service and materially tends to increase infection and other serious complications arising from non-medical attention or inadequate medical attention. Our records for the year 1915 show that infection produced 23 per cent of the total number of permanent partial disabilities and that in the temporary total classification, 10 per cent of the cases were due to infection. Physicians should insist upon employers making a report whenever medical service is rendered, even in the most trivial injuries—not only that they may be justly paid for their services, but for the protection and benefit of the claimant.

The suggestion is made that the State Hospital Association get together and agree upon an average State-wide ward and private room rate, and that a meeting for this purpose be had and that

every hospital in the State be required to submit a statement showing the per capita cost for patients in their institutions, and that an average minimum per capita cost rate be established for use in all industrial cases whether submitted to the hospital by self-assured employers or those directly under the State, and that a plan be worked out similar to that in use by the Cleveland Hospital Association since January 1, 1917. The advisability of this can be readily seen, owing to the fact that the Industrial Commission receives hospital bills from practically every hospital in the State, and to pay the per capita cost per patient for each hospital separately would not be feasible, owing to the present volume of our work. In this connection I wish further to say that a number of instances have come to my attention wherein some hospitals in the State have submitted bills to us for payment at a rate of \$15.00 per week, when as a matter of fact the patients were treated and given ward service where the ward rate to other patients was much less. The rules under which we have been working give hospital rates at \$10.00 for ward service and \$15.00 for private room service. This does not mean that bills submitted to the Commission for payment should always be \$15.00 per week regardless of the service given.

W. H. WHITE.

Protest of the Ohio Valley Druggists' Association.—A resolution has recently been adopted by the Industrial Commission in regard to the payment of drug bills, to the effect that after January 1, 1917, only special drugs and medical appliances which are not usually carried by the attending physician shall be paid for from the State insurance fund.

On November 23rd a committee from the Ohio Valley Druggists' Association appeared before the Commission and protested against the action of the Commission, and as a result a conference has been arranged for February 11, 1917, at 10:00 A. M., in the hearing room of the Commission, Majestic Building, Columbus, Ohio. This conference is open to any druggist or physician who may desire to be present.

DEPARTMENT OF THERAPEUTICS

Conducted by J. B. McGEE, M. D., Cleveland

Sodium Bicarbonate: In the *New York Medical Journal* for February 3, Louis F. De M. Sajous writes upon sodium bicarbonate in gastro-intestinal disorders. The marked relief afforded in many gastric conditions by sodium bicarbonate gives rise to the question, Is the continuous use of the drug—or of other alkalies—likely to produce unfavorable effects, and if so, do the benefits attending its employment outweigh these effects? To the massive amounts given in former times was ascribed by Trousseau a condition of "alkaline cachexia," and in dogs daily doses of one-half to two ounces have been observed to cause death in three to five days with pathological findings of anemia of the liver, spleen and lungs and hyperplasia of the intestinal follicles, and the Malpighian bodies. Amounts smaller, but sufficient to saturate completely the hydrochloric acid of the gastric juice, may prove harmful by inhibiting gastric digestion, and since the acid in the stomach has been shown by Pawlow to be a specific excitant of the pancreas, likewise intestinal digestion. Hayem has been led to discard alkalies in the treatment of digestive pain, substituting bismuth subnitrate in large doses on the empty stomach every morning—except temporarily in attacks of violent pain, in which morphine would be required if sodium bicarbonate was not administered. In partial opposition to Hayem's view is, for example, that of J. Kaufmann, who believes that with proper dieting and corrected mode of living, more than mere symptomatic effect results from the use of alkalies. In continuous hypersecretion—gastro-succorrea. Reichmann's disease—Kaufmann recommends that alkalies with bismuth be liberally used before and after meals, and whenever pain or discomfort calls for amelioration. A. Bassler, while enjoining care with bicarbonates and carbonates, states that the use of alkalies may be kept up for long periods without danger to the stomach. On the whole, it would seem that with due circumspection on the physician's part the dangers attending continued use of sodium bicarbonate, especially if combined with other alkalies, are less than Hayem's statements would lead one to suppose, though in many cases it is perhaps best to consider the use of alkalies a temporary measure only, to be employed only during the periods of exacerbation. Other useful effects of sodium carbonate are: 1. "The insuring of salivary digestion of starches in the stomach by giving alkalies before meals. 2. The neutralization of sour articles of food, including unripe fruits, and unsaponified fats, which by preventing proper alkalinity in the duodenum, inhibit the duodenal reflex for opening of the pylorus, and retard gastric evacuation. 3. Possibly a reduction in the secretion of pancreatic juice upon ingestion of sodium bicarbonate in solution—an effect which Wilbrand believes may prove of value for sparing the pancreas in diabetes mellitus.

High Blood Pressure: Tom A. Williams, in the January number of *American Medicine*, considers the antecedents of high blood pressure and nervousness, and the treatment. Of that type of blood pressure not accompanied by sclerosis of the blood vessels or renal cirrhosis there are some features not generally grasped. Very often the symptoms first shown by patients with increased vascular tension are referred to the nervous system, both peripheral and central. He asserts that the common attribution of arterial hypertension is a myth. Alcohol, on the contrary, not only lowers vascular tension and dilates the heart, but interferes with the assimilation of the proteins upon which this disease depends. Another commonly held notion which he believes to be erroneous is that as age advances, the blood pressure should do so also. This opinion is based upon the fallacious reasoning that what is common must be healthy, irrespective of the environmental conditions. On the contrary, hypertension is always a sign of deterioration, and its causes should always be sought for

and if possible met. This can be done, unless organic changes have occurred to which hypertension is a permanently needed response. The pathogeny he believes to be improperly metabolized protein, and this opinion is supported by the remarkable success of a treatment which while stimulating metabolism at the same time reduces the load both of albuminoids and extractives. This he accomplishes by imposing a diet based on the Chittenden standard of 50 grammes protein a day, supplemented by abundant addition of the alkaline salts of the vegetable acids in the natural combinations occurring in fruits and vegetables. Metabolism is further aided by exercise appropriate to the age and cardiovascular condition, and by hydrotherapy and massage adapted to the individual constitution dealt with. By these measures the disease is attacked at its source, a much more rational procedure than neutralizing its effects by cardiovascular depressants such as nitrites, or than by dealing with bromides, or by the giving of strychnine, digitalis, caffeine and so-called tonics in a vain endeavor to whip up jaded organs. Purgation is inadmissible. Constipation, which is very common, he has never yet failed to relieve without stimulating cathartics. The intestinal atoxia with which these patients so often suffer may be removed by abstention from purgatives within two weeks. During this period it may be necessary to aid evacuation by massage or even enemata, while the standard dietary affords enough cellulose and fibre to dilute the feces to a bulk sufficient to arouse peristalsis. Strain and anxiety he believes purely secondary in their effects as they interfere with the vegetative functions and so disorder metabolism. Only, however, if there is a protein overtake do we obtain the conditions required for the disease.

Sodium Cacodylate: H. N. Cole, in the *Journal A. M. A.* for December 30, 1916, contributes a study of sodium cacodylate in the treatment of syphilis. In spite of the attempts of several workers to disprove the claims made for sodium cacodylate as a powerful remedy in the treatment of syphilis, the drug is still quite extensively used by the general practitioner, and by many specialists in treating this disease. Yet Nichols notably by his work on rabbits has proved that it is worthless as a spirocheticide. Cole's conclusions are that careful analysis of the findings of Prof. Sollmann and himself proves the contention of Nichols and others. Sodium cacodylate is worthless as a spirocheticide: yet many physicians are depending on this drug today in the treatment of syphilis. The conclusions arrived at are such that they are justified in saying that: (1) At the utmost sodium cacodylate has perhaps a slight action on the popular and nodular syphilids, but in no case is it to be compared with even mercury and potassium iodid alone. It is probably to be explained entirely from the tonic action of the arsenic on the system. (2) In cases of syphilis with mucous patches it is worse than useless. (3) In one case there was a drop in the spinal fluid cell count from 65 to 25, but the Wassermann and Noguchi tests remained positive, and cases 1 and 4 with cerebrospinal involvement showed practically no change. (4) The contention may be raised that large enough doses were not employed—0.5 gr. every three days. Routine urine examinations in two cases, however, out of a total of ten studied showed red cells and albumin, the one after four, the other after six injections. After consultation with Dr. Sollmann, it was decided to use no larger dosage, leaving it to others more courageous. (5) The routine positive blood Wassermann in all ten cases was in no instance changed to negative.

Ovarian Therapy: *The Medical Record* for February 3, summarizes the progress in our knowledge of ovarian therapy. The absence of a definite physiological action in the genital gland extract (in contrast with the thyroid, hypophysis and adrenals) will doubtless cause scepticism regarding the therapeutic value of these bodies. Bucura in the *Zentralblatt für Gynäkologie* blames this scepticism in part upon poor

ovarian extracts, the manufacture of which in Germany is without State control. The substance again is by no means always identical when prescribed. For biological reasons, ovarian extract should come from the sheep or pig, preferably the latter. In the natural and artificial climacteric a good preparation should be given in increasing dose until all symptoms disappear which may require from one to three years. The extract had best be given over a period of three to eight weeks, after which it is discontinued for one week, to be resumed again for four to six weeks, etc. Eventually one week in each month represents the period of exhibition. Apparently a high blood pressure may be brought down by the treatment. Aside from the climacteric, the indications for ovarian extract are very numerous: in general, wherever the function of the ovary is defective. Hence it may be tried out in many obscure conditions. Thus far the only known contraindication is tuberculosis. In opposition to Bucura's views as based on clinical experience, numerous experimenters regard the corpus luteum as having highly specialized properties. It has even been claimed that it is able to arrest the development of the testicles in young animals. Novak in an article on the functions of the corpus luteum, agrees with Bucura that the difference between the secretion of the corpus and that of the follicle is merely one of degree.

Syphilis: In the February number of the *American Journal of the Medical Sciences*, Julian Mast Wolfsohn summarizes the treatment of syphilis of the central nervous system with intraspinal injections of mercurialized serum. Until recently the treatment of syphilis of the central nervous system was not essentially different from that of syphilis elsewhere in the body. Because of this, results in these cases have been far from satisfactory. Ravaut and Udo Wile have shown that the central nervous system is involved in the early stages in the majority of cases. Systemic treatment here is usually efficacious, even though there may be an extensive meningitis, with headache and other functional disturbance. Later, however, the changes in the central nervous system and its envelopes are more chronic and yield less readily to medication. Before the advent of salvarsan treatment of nerve syphilis with mercury was far from encouraging, because there were so many relapses. The present drift of opinion is that in the exudative gummatous, inflammatory and arterial forms, salvarsan is by far the most efficient remedy we possess. In the use of mercurialized serum it is important to examine the urine for abnormalities before each treatment as the presence of albuminuria is, he believes, a distinct contraindication for treatment. He concludes that the facts of greatest interest to the neurologist in connection with intraspinal mercurialized serum treatment are: (1) There is no danger in its administration. (2) For local treatment it is very efficacious in syphilis of the central nervous system, and especially in the treatment of *tabes dorsalis*, in which lancinating pains are the predominant symptom. (3) Due to its stability, the serum may be used at any time after its preparation. (4) The lack of expensive drugs used in its preparation make it invaluable at this time. (5) There is no objection to a combined salvarsanized and mercurial treatment. (6) It must not be concluded from the short space of time (eight months) that has elapsed since the beginning of this form of treatment in these cases that relief is going to be permanent. One will have to be cautious about prognosticating a cure until the proper length of time elapses, e. g., at least three years. From the results so far obtained it has certainly mitigated the symptoms of pain.

Locomotor Ataxia: In the *Medical Council* for January, Edward Livingston Hunt writes upon the occurrence and treatment of pain in locomotor ataxia. Pain in locomotor ataxia is one of the leading symptoms of the disease. While the pains may occur in all three stages of the disease, they are most violent in the first, and least in the third. As to treatment, first simple external remedies should be tried, such as hot-water

bags, the application of sand bags, ironing, ices, iodine, mustard, and plunging the legs in alternating hot and cold baths. Dry cups, the cautery, chloroform liniment, firm bandaging, vibration, massage, and faradization can and should be tried. If, in spite of these remedies, the pains still persist, or tend to become worse, the patient should be put to bed and resort had to internal remedies. One may choose from aspirin, pyramidon, antipyrin, codein, salipyrin and even sodium salicylate. A French method, which consists of injecting a weak solution into the subarachnoid space, should also be mentioned. It is neither practical nor free from danger. Finally there is the hypodermic of morphine. This should only be given by a physician and then as a last resort. If, however, nothing else relieves, it should be given unhesitatingly. It is a curious but none the less true fact that the particular remedy which will at one time relieve the attack of pain will at another utterly fail. Rest is a powerful aid, but the most efficacious remedy is the intravenous or particularly the intraspinal form of medication. It matters little whether the drug is salvarsan, salvarsanized serum, or bichloride of mercury. Any one of these intraspinaly will give very great relief to tabetic patients who suffer from bladder disturbances, stiffness and pain in the legs. It is especially of value in relieving the pain. The treatments should begin with intravenous and later become intraspinal, about every ten days or two weeks.

Pneumonia: Solomon Solis Cohen, in the *American Journal of Clinical Medicine* for February, gives bedside directions for the treatment of acute lobar pneumonia. After pulse, temperature and respiration have been recorded, together with blood-pressure, both systolic and diastolic; after due arrangements have been made for proper supply of fresh air; after a preliminary cleansing sponge or bath, followed by a hot alcohol rub and the chest wrapped in lamb's wool—or cotton batting jacket—this sometimes preceded by a mild mustard poultice, or a hot flaxseed poultice has been applied; and after a preliminary dose of calomel has been given, the administration of quinine and urea, hydrochloride and pressor agents—intramuscularly, if possible—is at once instituted. According to the severity of the case, and especially the height of the temperature, the first injection of the quinine compound is from 10 to 25 grains (0.6 to 1.5 gm.). The second injection, made three hours later, should not be more than 15 grains (1 gm.), nor should any injection be given if the temperature has by this time fallen to 102 F. or less. The signal for renewing the injection is failure of temperature to fall or a rise of temperature later to 103 F. Any sign of untoward cinchonism should cause immediate interruption of the quinine injections. Such sign would be tinnitus aurium, dimness of vision or persistent sweating. In more than 500 cases he knows of only two instances in which cinchonism developed, however. Certain *precautions* are necessary in the administration of the quinine and urea salt. The solution (50 per cent to 30 per cent) is to be made extemporaneously in boiling water, so that a syringeful (about 20 to 30 minims, say 2 mls) (c.c.) contains the full dose to be given—10 to 25 grains (0.6 to 1.6 gm.). Antiseptic routine must, of course, be followed strictly. The skin of the site selected for injection (posterior or exterior aspect of arm, thigh or shoulder) should be painted with tincture of iodine; the needle is plunged deeply through the iodized skin into the muscle and then emptied. In withdrawing the needle, care is to be taken that a drop of solution does not fall on the skin. The puncture is sealed with collodion, and necrosis and abscess are thus avoided. When it is impracticable to administer the quinine and urea by intramuscular injection, oral administration may be substituted, but it is far less effective. The doses should be increased by at least 50 per cent or the same quantity given

kept up for more than seventy-two hours. It is a question of judgment in the individual case. In many cases a single injection is sufficient. In others as many as ten or more may be required. Commonly three or four will suffice.

NEW AND NONOFFICIAL REMEDIES

Tabellae Dulces Aristochin (Western), 1 gr.—Each tablet contains aristochin 1 grain with cocoa, sugar and saccharine as vehicles.

Tabellae Dulces Heroin (Western), 1-100 gr.—Each tablet contains heroin 1-100 gr. with cocoa, sugar and saccharine as vehicles.

Tabellae Dulces Novaspirin (Western), $\frac{1}{4}$ gr.—Each tablet contains novaspirin $\frac{1}{4}$ grain with sugar, starch, liquid petrolatum, saccharine, curcuma and oil of lemon as vehicles.

Tabellae Dulces Tannalbin (Western), 1 gr.—Each tablet contains tannalbin 1 grain with cocoa, sugar and saccharine as vehicles.

Tabellae Dulces Terpin Hydrate with Heroin (Western), 1-100 grain, with cocoa, sugar and saccharine as vehicles. Western Chemical Company, Hutchinson, Minn. Accepted for the Appendix to New and Nonofficial Remedies (*Jour. A. M. A.*, Feb. 10, 1917, p. 461).

During February the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Nonofficial Remedies:

Merck & Company

Optochin.

Optochin Hydrochloride.

E. R. Squibb & Sons:

Tablets Sodium Chloride and Citrate—Squibb.

(Dr. Martin H. Fischer).

Vaccine Therapy.—D. J. Davis, Chicago (*Journal A. M. A.*, Jan. 20, 1917), reviews the history of vaccination and says that for a few certain diseases the prophylactic value of specific vaccine has been shown, but in the great majority of infections it has not had great success. The curative use of vaccine is also discussed, and he thinks this specific treatment may be called in question, and at the present time the facts known would seem to indicate that nonspecific substances are largely responsible for the results in many of the conditions and cases reported. Recent work tends to show that many substances, the so-called foreign proteins and their derivatives, may when injected, especially into the veins, quickly cause a severe chill followed by high fever, leukocytosis and certain changes in the blood, especially the appearance of ferments. These proteins may be derived from disease germs or they may consist of other animal substances like serum proteoses and milk. After this reaction marked improvement and even permanent cure may result in certain diseases, especially in typhoid fever, rheumatism and gonococcic infections. This may be due to the high fever and to the increase of ferments and leukocytes of the blood, and other factors are also probable. Davis thinks that the most important problem that concerns the vaccinationist just now is the nonspecific effect of vaccines. The possibilities of development along this line are many; but the lack of data leaves many questions uncertain. The former treatment should not be referred to as specific or as vaccine therapy. It is nonspecific and usually but not necessarily protein therapy. The domain of vaccines is protective, not curative, according to the present data.

The Academy of Medicine of Cleveland

ACADEMY MEETING

The one hundred and thirty-sixth regular meeting of the Academy of Medicine was held Friday, February 16, 1917, at the Medical Library. The President, R. K. Updegraff, in the chair.

The minutes of the last meeting were read. Doctor Bunts desired the minutes to be corrected so as to show that he spoke in favor of the nurse as an anesthetist. He felt that the minutes as read reported the negative more fully than the affirmative discussion.

The secretary explained that it was not intentional to have the minutes appear one-sided, and that in reporting the minutes the position of those who opened the discussion only had been noted, and that the minutes would be corrected to show clearly Doctor Bunts' position.

On motion the minutes as corrected were approved.

The minutes of the Council meeting of February 13th were read and approved.

Doctor Eisenbrey introduced the following resolution:

"That a committee be appointed by the chair to canvass the membership of the Academy of Medicine in order to ascertain the previous military training and present affiliation of each member, and to obtain an expression as to their willingness to serve in case of need in any of the professional capacities outlined by the government authorities. The information so gained to be recorded and placed at the disposal of the Surgeon-General of the Army and the National Red Cross Organization."

Doctor Bunts moved that the rules be suspended and that the Academy take direct action upon the resolution. Seconded by Doctor Bernstein, and carried.

The chair then called for a vote upon the resolution. The resolution was adopted.

Doctor Bunts called attention to the fact that the U. S. Navy was recruiting for its medical reserve corps. He pointed out the advantages of that service and suggested that any who might be interested could write the Surgeon-General of the U. S. Navy.

Program:

General Topic—FRACTURES

1. Fracture of the Base of the Skull, by F. E. Bunts, M. D.

The simple fractures of the skull require no treatment save rest in bed and quiet. The associated injuries, such as lacerated brain, hemorrhagic extravasations, oedemas, contusion, and meningitis, require first attention, and likewise determine the immediate prognosis. As a general rule epistaxis and subconjunctival hemorrhage commonly signify fracture in the anterior fossa, hemorrhage from the ears, middle fossa, hemorrhage from pharynx and ecchymosis about ear or in tissues of the posterior neck, the cerebellar fossa. A bloody cerebrospinal fluid is one of the most positive signs of fracture of the base. Injuries of the cranial nerves are equally as common in fractures of the base, especially injuries to the seventh, first, fourth and sixth nerves. Fractures through the middle fossa may injure both the carotid artery and cavernous sinus so that an arterio-venous aneurysm results, the outcome of which is a pulsating exophthalmos. Cerebral symptoms are usually due to the associated laceration of the brain, or from hemorrhage or oedema. Slowing of the pulse and Cheyne-Stokes respirations are present in such a variety of conditions, and must be given but little weight in making a diagnosis.

It is impossible to say what proportion of fractures of the base of the skull will be revealed by the X-ray, but we must be prepared for failure in

a very considerable number of instances, and the reason is not alone due to the normal irregularities of the bones at the base, but also to the inherent difficulties in taking the negative. Fractures in the posterior fossa show with considerable constancy; next in frequency of good results is the anterior fossa, while fractures through the middle of the base probably will not show in more than 50 per cent of cases. When the fracture extends through the vault, as it often does, it is much more readily and constantly detected. The prognosis outside of the hemorrhage or discharge from the ear, or when there is a nerve injury as a result of fracture of the base, is ordinarily good. The greatest danger we have to fear is infection and the development of a meningitis. Laceration of the brain may be so great as to cause sufficient hemorrhage to produce compression symptoms, but in the absence of these we must rely on nerve injuries and bloody spinal fluid for a diagnosis. Delirium and insanity are also evidences of cerebral irritation, and of some value in establishing a diagnosis. From my own experience clinically I would say that none of these symptoms demand operative interference, there being nothing certain or definite to operate for.

Associated fracture of the vault with brain injury or compression will, I believe, always demand operation in the hope that removal of spicula of bone or blood clot, etc., may save the patient and prevent some of the more serious forms of brain sequela. Yet it seems that in these cases fatalities are quite numerous, due most probably to the fact that the nature of the injury has been so serious as to render a more favorable outcome impossible.

Compression of the brain is a more or less common accompaniment of fracture of base, and may come on several hours or even days after the injury. It seems reasonable to consider very seriously the question of decompression in all these cases. The degree or the severity of the compression symptoms often depend quite as much upon the location of the hemorrhage as it does on the amount. Though the clot may sometimes, as has been done, be successfully removed, it is more frequently inaccessible or so spread out on the base of the brain as to be impossible of removal.

Where the symptoms develop gradually, ophthalmoscopic examination may give the first danger symptom in the beginning development of choked disk, and in its presence I do not believe that operation should be delayed.

In my series of 33 cases, 16 died and 17 recovered. Of the 16 fatal cases, 7 were operated upon. The operations were undertaken in exceptionally bad cases when associated with injury of the skull and brain. I do not wish to shirk any possible criticism of technique leading to such a fatal array of cases, but to state that it is my belief that the operative disclosures in all of them made it evident that they were primarily fatal. The criticism which I have to offer is that surgical judgment should have shown me beforehand that a favorable outcome was impossible, and yet it often seems that it is in the face of the seemingly hopeless things that we refuse to acknowledge that there is no chance, and operate because the patient will surely die if we don't.

I have no doubt but that had all these cases of recovery without operation been operated upon by a decompression operation and had recovered, one might have been influenced to regard many of them at least due to the operation.

2. Diagnosis, Treatment and Prognosis of Fracture of the Pelvis, by G. E. Follansbee, M. D.

Fractures of the false pelvis or ilium above the ileo-pectineal line are seldom serious. There is seldom much displacement present. In closed fractures the treatment is rest in bed, with support of adhesive plaster or sand bags; in open fractures, however, operative fixation may be advisable. Fractures of the true pelvis are much more serious, since the soft parts nearby are likewise injured, due to the great force which is necessary to break the bones.

The diagnosis is made by palpation, manipulation, and the X-ray. The true pelvis can be palpated throughout most of its extent by a rectal or vaginal examination. Pressure on the pelvis antero-posteriorly or laterally may sometimes elicit pain at some point which may be indicative of a fracture, but which palpation may fail to disclose. If a point of pain is found distant from the point of pressure by the above manipulation, a fracture is almost invariably present. The X-ray shows all the pelvic bones distinctly, and the plates should be taken stereoptically. The pelvis may be fractured in any direction, but the usual line of fracture is through the rami of the pubes and ischium on one side with frequently a fracture at a corresponding side on the other. A fracture posterior to the acetabulum is likely to be vertical, if the fracture is through the lesser sacro-sciatic notch. The acetabulum is occasionally fractured by the head of the femur being driven through by the crushing force. Fracture of the coccyx is very rare, however; most cases of supposed fracture are usually a sprain of the sacro-coccygeal joint. A large proportion of cases of fracture of the true pelvis die of shock, hemorrhage, or associated injuries. In uncomplicated cases, rest in bed in the most comfortable position, with proper support, is all that is needed unless complications arise. The important organ frequently injured is the urethra, usually in its membranous portion, at its passage through the triangular ligament. The best means of diagnosis is the catheter. This injury is very difficult to repair, and operation should be done as soon as practicable after injury, for the longer it is delayed the harder it is to find the end and the greater the danger of sepsis. Rupture of the bladder as a complication is next in frequency and demands operation as soon as diagnosis is made.

At the time of operation for complications, reduction of the fragments should be accomplished. I prefer fixation with heavy chromic gut, rather than wire plates or nails. Other complications which may arise are: rupture of the iliac vessels, injury to the rectum, sciatic nerve, and to the sacral plexus in fracture of the sacrum.

Doctor Stern presented two patients upon whom the Albee operation for spinal fixation had been performed; the one for a fracture in the cervical region, and the other for an injury in the upper lumbar region.

Doctor F. E. Bunts presented the first paper of the evening, "Fractures of the Base of the Skull."

Doctor Follansbee then read a paper on "Diagnosis, Treatment and Prognosis of Fractures of the Pelvis."

In discussion Doctor Stern stated that in his experience a penetrating fracture of the acetabulum was difficult both as to diagnosis and reduction.

Dr. Fred Herrick stated that in a certain obese patient they were able to make the diagnosis by comparative measurements of the two sides.

Doctor Sanford discussed the treatment of the complication of ruptured urethra.

Doctor Bauman thought that sprain resulted at the sacro-iliac joint more often than fracture. He said that displacements of the symphysis could often be treated by forcible reduction.

Doctor Follansbee closed the discussion by stating that the treatment of fractures of the pelvis was in the main the treatment of complicating injuries of the adjacent soft parts. He doubted that injury to the sacro-iliac joint sufficient to affect the nerves could occur without fracture being present.

3. Mechanical Devices for the Treatment of Fractures of the Long Bones, by F. P. Corrigan, M. D.

The study of definite mechanical principles is absolutely necessary in order to secure restoration of function, which implies anatomical restoration of function and bony union. There are several good reasons why broken bones should be reduced as soon as possible; both subjective and objective, it is easier for the doctor and better for the patient. When the

fracture is recent the muscles offer less resistance, and extension is easier before the inflammatory effusion supervenes. One of the most desirable qualities for a mechanical device for treatment of fractures is that it may be quickly and easily applied.

There are two forms of devices used in the treatment of fractures of the long bones; (1) devices for applying extension to the broken limb; (2) devices for controlling the position of the fractured ends with relation to one another, and so securing and maintaining apposition. Properly applied extension on a broken thigh does more than simply correct over-riding. Bardenheuer, of Cologne, has shown that the extending force acting through the skin and muscles, and especially the intermuscular septae, exercises just as definite a corrective action on the upper fragment as on the lower, so that the fractured bone is swung as in a hammock that has been pulled taut.

A plaster-of-Paris dressing put on while the limb is extended, sometimes successfully, attempts to be a combination of the two devices in one. The devices for controlling the fractured ends are: (1) those applied directly to the outer surface of the limb; (2) those applied directly to the bone in the open or operative method. To the second class an addition has been recently made by Dr. Allen, of Indianapolis. The device consists in two pins which transfix the limb, going through the two fragments of bone. After good union is obtained the two ends of the pins are fused together, thus holding them firmly.

The future treatment of fractures will crystallize along the line of greater attention to the extension principles laid down by Bardenheuer for the closed treatment, and wider use of the bone graft as against metal devices for the open treatment.

4. Fracture of the Spine Without Paralysis, by W. G. Stern, M. D.

Fractures of the spine without paralysis are difficult to diagnose. The larger proportion of these fractures are without any cord symptoms. There are many varieties of isolated fractures of bodies, arches, transverse processes, and in combination with dislocation. They occur more frequently in men than in women, and are usually the result of direct violence; in this case they are confined to the spinous processes of the arches. The dorsal spinous processes are quite frequently torn off, due to indirect violence, or sudden muscular effort. When the fracture occurs by shortening of the longitudinal axis of the vertebral column, it is known as an indirect contusion. Fractures from compression are found in regions where a flexible portion of the spine joins a more fixed portion. Dislocation and rupture of the intravertebral ligaments are usually associated with fracture.

The refinements of the methods of diagnosis have convinced us that neuresthenia, railroad back, etc., must be abandoned. A safe road to follow is to hold all cases of injury to the back as fractures until proved otherwise.

Trauma of the back may be classified under four heads: (1) contusions, (2) sprains, (3) fractures, (4) dislocations. With contusions there is no fixation. In fractures and dislocations there is localized pain, tenderness and fixation in the segment involved. The spine is sore and weak. There may be an inequality in the spacing of the spines. The radiograph is the best and final arbitrator, as to the presence or non-presence of a fracture or dislocation. If a man receives an injury to his spinal column and complains of pain in some other point, or if the pain should persist one week after absolute rest in bed, then careful radiographic examination should be made. The radiograph is apt to be misleading, therefore always get a good ant-post, lateral, and stereoscopic view.

Where there are symptoms of pain, loss of function, and inability to work, repeat the radiographic examination, since the repair is very slow and the formation of a true callus seldom takes place. To avoid kyphosis put

patient on a bent gas-pipe frame to bring about extreme extension for three months, then put on a plaster cast or jacket. Dislocations are manipulated and put into a cast. If in any fracture normal function does not return after six to nine months of proper treatment, then an operative procedure should be considered.

At this juncture it was discovered that some one had removed the lenses from the stereopticon, and the meeting was adjourned to the library rooms for a luncheon and smoker.

The following non-resident members were present: Doctors A. B. Walker and H. M. Schuffell, of Canton; Dr. E. A. Case, of Ashtabula, and Dr. C. H. Cushing of Elyria.

EXPERIMENTAL SECTION

The ninety-third regular meeting of the Experimental Medicine Section was held February 9, 1917, at the Cleveland Medical Library, with H. T. Karsner in the chair.

Program:

1. The Renal Functional and Morphological Changes in Animals. By P. J. Hanzlik, M. D., and H. T. Karsner, M. D.

Dr. Hanzlik:

Working in conjunction with Dr. Scott on the administration of salicylates to patients suffering with acute articular rheumatism, we observed albumin W.B.C. R.B.C. and casts in the urine. Similar experiments were performed on animals. Full doses of salicylates were given by mouth; urine and blood examinations made. The urine was examined for albumin, cells and casts, the blood for non-protein nitrogen, and urea nitrogen. Sections of kidney were preserved for histological examination.

Dr. Karsner:

The kidneys of these dogs were fixed in Zenker's and stained in hemalum and eosin. No fat stains were used, since fat in the kidney of the dog is quite prevalent and not considered worth while to study. Cloudy swelling is another condition which is not far from normal in these animals. When, however, additional changes supervene we are privileged to add some importance to this condition. Some of the kidneys showed very marked changes. The classification of this nephritis is very difficult, and with a mild glomerular change it was fair to call it a tubular rather than a glomerular type of nephritis. We were therefore justified to conclude that salicylates produce a moderate degree of nephritis. Several investigators have stated that after salicylate administration the kidneys show cloudy swelling, necrosis and hemorrhages. Out of 19 dogs we only found one which showed a definite hemorrhage into the kidney.

Conclusions:

The administration of salicylates, in doses corresponding to full therapeutic doses in man per kilo of body weight, causes the appearance of albumin, leucocytes, casts or cast-like bodies, and sometimes red blood corpuscles in the urine of animals (cats, dogs, and one rabbit). A pre-existing albuminuria is aggravated by the administration of salicylate, which is of direct renal origin. So far as the non-protein nitrogen and urea nitrogen of the blood are concerned, there is a diminution in the renal functional efficiency. Morphologically a lesion of the kidney appears, varying in severity from simple cloudy swelling of the epithelium of the proximal convoluted tubules to extensive cloudy swelling of all the cortical parts of the tubules associated with an acute intracapillary glomerulitis, the latter process being denominated as an actual tubular nephritis.

2 The Vascular Reaction in Experimental Acute Tartrate Nephritis. By H. T. Karsner, M. D.

Dr. Karsner briefly discussed his experiments, from which he drew the following conclusions: During the second and third days of tartrate nephritis in dogs the vascular reactions of the kidney are practically normal, except that caffeine does not produce a diuretic effect equal to that seen in normal dogs. In the fifth day of tartrate nephritis the vascular reactions are somewhat more marked than normal and the diuretic effect of caffeine is equal to that seen in normal dogs. During the second and third days the daily output of urine is usually reduced in amount, whereas by the fifth day it has increased above normal. It would therefore appear that the diuresis of the later days of tartrate nephritis is in part at least due to the hyperexcitability of the blood vessels.

The study has shown no good reason for believing that the appearance of albuminous precipitate in the subcapsular space indicates an alteration in the functional capacity of the glomerulus, nor has the converse been proven. This work taken in conjunction with that of Underhill, Wells and Goldschmidt on the function of the glomerulus would indicate, however, that this structure functionates normally in tartrate nephritis. The kidneys of four out of seventeen animals studied histologically show the presence of albuminous precipitate in subcapsular space. It is possible that in at least some of the animals whose vascular reactions were studied this material was washed out by the diuresis. The depressor substance of dog's urine is not removed by the presence of tartrate nephritis, although it may be somewhat reduced either in quantity or in activity.

CLINICAL AND PATHOLOGICAL SECTION

The one hundred and twenty-second meeting of the Clinical and Pathological Section was held Friday, February 2, 1917, at the Cleveland Medical Library, Dr. Maschke, chairman.

Program:

1. Eclampsia: Report of two cases. By E. O. Houck, M. D.

(a) This patient, a young woman, three months pregnant, had a paralysis of her left leg the day preceding her first convulsion. The next day she developed generalized convulsions; at this time the cervix was dilated and emptied. Convulsions continued for thirty-six hours after the uterus was emptied and a considerable amount of decidua removed. After this the patient made an uneventful recovery.

(b) Patient at full term, with convulsions. A manual dilatation of cervix and high forceps delivery was done. Death occurred within twenty-four hours. The first case shows that convulsions can come on even after the uterus is emptied.

Discusson: Dr. Skeel

This matter of convulsions after delivery speaks against this procedure. Nothing as yet is known regarding eclampsia. The actual physical work done during labor will increase the amount of toxins in the blood. Very careful judgment, therefore, is necessary as to how much stress the patient has to undergo, how much will the anesthetic damage the kidneys and increase the amount of toxins. We can get good results by giving the patient rest, diet, diluting the toxins by bleeding or introducing fluids. Ether or chloroform should be avoided in every case of eclampsia; use nitrous oxide. Moreover, use the most advantageous method of emptying the uterus.

Undescended Testicle: Report of two cases.

(c) This patient had been operated for appendicitis several years previous without any relief of his condition. He came to me several months

ago complaining of pain over McBurney's point. On examination, undescended testicles were found in the inguinal canal on both sides. The Davidson operation was performed, followed by complete recovery.

(d) Boy, 15 years old, came to my office complaining of attacks of abdominal pain for the past two years. These attacks simulated appendicitis. Undescended testicles were found on examination. The Davidson operation was done and resulted in complete recovery.

The Davidson operation is very satisfactory and very easily done.

2. (a) Diagnosis of Subphrenic Abscess, by S. S. Berger, M. D.

Subphrenic abscess is a localized collection of pus under the diaphragm. There are four intraperitoneal and two extraperitoneal spaces, according to Barnard, of London. Infection may originate in organs surrounding these spaces, or in other organs in the abdomen, *e. g.*, appendix. Clinically one of these spaces is usually involved; as the abscess grows the diaphragm is displaced upwards and signs of compression of the lung present at the right base. It may extend from the appendix up to the liver, and gradually increase in size, and finally appear in the loin as a lumbar abscess. When a gastric ulcer perforates a subhepatic pouch is infected and the abscess presents a triangular area extending from the costal margin to the enciform cartilage. The falciform ligament forms the outer margin; the lower margin is formed by adhesions. Subphrenic abscess is most common on the left side and usually follows a perforated gastric ulcer, and always contains gas. The gas accumulates at the upper angle of the triangular space formed by the abscess. This area of tympany changes with the change of position of the patient.

Signs of collection of pus in the lesser peritoneal cavity simulate a pseudo-pancreatic cyst. An hepatic abscess is usually accompanied by jaundice. At times the pus in the abscess pushes the diaphragm up and finally bursts into a bronchus. The pus may present below the last rib, but it most usually ruptures into the lung. Some of the reasons for the collection of pus underneath the diaphragm are: (a) suction due to the upward movement of the diaphragm; (b) the prone position of the patient.

Onset of this condition is usually sudden, accompanied by local pain and tenderness. There is usually a history of abdominal trouble, malena, or appendicitis. In any case of obscure fever and leucocytosis a subphrenic abscess should always be thought of. The pulmonary symptoms may be the most prominent and lead one astray. An exploratory needle should be used in any suspicious case.

Case I. Patient complains of pain over McBurney's point. Past history negative. There is a slight rigidity of the right rectus muscle, leucocyte count 12,000. Operation revealed a markedly thickened appendix. Five days after operation the patient had fever and signs of pulmonary compression at right base. An exploratory needle was inserted but no pus was obtained. Few days later the fever was still present, leucocyte count 36,000, symptoms more violent. Upon insertion of a needle, gas came out. The patient was operated, but no pus found at operation. Two weeks later the abscess pointed at the hypochondrium; patient died few days later.

Case II. This patient was operated on for an acute appendicitis and a retrocaecal appendix found. Convalescence uneventful. Two weeks later he had fever, and complained of pain in his right hypochondrium and loss of weight. Physical examination revealed marked signs of pulmonary compression, and a tender mass palpable below the costal margin. There was a tympanitis area above the right costal margin, from which gas escaped when a needle was introduced. Patient was operated and recovered.

Case III. Patient was operated on for acute purulent appendicitis, and drained for three weeks, after which a fistulous tract resulted. This was removed at operation, and two weeks later a small sinus still persisted. At this time he had fever, a hard mass could be palpated from the umbilicus to

the costal margin. X-ray showed a high position of the diaphragm. A needle was inserted and pus obtained. Drainage was established at operation, but fever persisted. Blood cultures were negative. Three weeks later a large amount of necrotic liver tissue drained out. He finally coughed up a large amount of pus and necrotic liver, and died of a combined liver and lung abscess.

3. (b) Surgical Treatment of Subphrenic Abscess, by M. E. Bland, M. D.

The treatment of subphrenic abscess may be surgical, even though a limited number of cases recover without it. The pus may become walled off and become absorbed, or rupture into a bronchus and be coughed up, or evacuated into the alimentary canal. There are two routes by which we may reach the lower part of the thorax. One is the thoracic, the other the abdominal. When the abscess is on the right side the thoracic route is most advantageous, when on the left, the abdominal. An abscess may point in the epigastrium.

Infection of the pleural cavity must be avoided when the thoracic route is employed. This may be accomplished by a two-stage operation, in which the pleural sinus is packed with gauze and a sinus allowed to form. At a subsequent operation the abscess is incised and drained through the sinus. We may sew the two layers of the pleura together and then incise the abscess. If the abscess is low down in the subphrenic space it can be incised below the pleural sinus.

3. Aortic Aneurysm: Report of an unusual case, by E. Klaus, M. D.

Male, 65 years old, was delirious 36 hours after onset of symptoms. For many years he was in need of no medical attention. His head and face were swollen and cyanotic. The superficial veins of the thorax and abdomen were enlarged and full. Mediastinal dullness extended two and a half fingers' breadth outside of the left soernal border. Tracheal tug not marked, B. P. syst. 130 in right arm, 140 in left arm. Wassermann very strongly positive. X-ray showed a uniform shadow along the left sternal border. Patient became comatose and died.

Discussion: Dr. R. K. Updegraff

The specimen shows an uniform dilatation of the thoracic aorta down to the coeliac axis, and is atheromatous down to the iliacs. In the region of the former ductus arteriosus the dilatation does not exist, but there is a narrow constriction. It is said that in this area dilations of the aorta never occur. The question was raised whether in addition to the aneurysm he had anything else. The lack of pulsation was considered to be due to a clot. A mediastinal growth was considered since the outline, in the X-ray was straight. Wintrich's tone change was also present. The lateral anastomoses of veins were all large. The question of operation was not considered in this case.

4. Pathological Fracture of Rib: Report of Case, by W. J. Manning, M. D.

Patient man, 48 years old, came into my office complaining of sudden severe pain in the chest, with no history of injury. There was a distinct elevation at the junction of the second rib with the costal cartilage. There was some dullness to percussion, and the X-ray showed a fracture of the rib; on motion of the arm crepitation could be elicited. Nothing was found in the plate to account for the fracture. There is some rarification of the bone and the possibility of osteitis fibrosa was thought of. According to a report of 97 cases of osteitis fibrosa none occurred in the rib.

Discussion: Dr. Eisenbrey

Osteitis fibrosa is more common than is usually considered. The skull may be attacked, long bones most commonly, and they are usually multiple.

Next condition to be considered is myeloma, which is usually accompanied by the Bence-Jones reaction.

5. Demonstration of Interesting X-Ray Plates. J. E. Olizenbaum, B. S.

(a) Man, age 58 years, had hematuria and albuminuria 20 years ago. Since that time he has had no trouble until the present illness. He had an uncomfortable feeling in that right lumbar region. A small hard mass was palpable. X-ray shows a large kidney stone on the right side.

(b) Man, age 36 years, complained of pain in the stomach for two years; pain had no relation to his meals. He vomited blood on several occasions and had tarry stools. No masses were palpable; stomach analysis: free HCL 39. Total 63. X-ray showed a penetrating type of ulcer. Ulcer was found at operation. Five months later he returned with the same complaint; X-ray at this time showed retention. He was treated medically for one month but no relief obtained. At operation another ulcer was found. Patient made an uneventful recovery.

(c) Man, 45 years of age, complaining of epigastric pain, marked hemorrhage. X-ray showed a penetrating type of ulcer, with an incisura opposite. Patient was treated medically and has been feeling fine since.

(d) Woman, age 68 years, complained of soreness in the abdomen. A hard mass was palpable which moved with respirations. X-ray showed the stomach displaced to the left side against the kidney. At operation an inoperable carcinoma of the pancreas was found.

(e) Man, age 48 years, complaining of epigastric pain, vomiting. The gastric analysis revealed a marked hyperacidity. The X-ray showed typical compensating peristaltic waves, due to duodenal obstruction.

(f) This patient complained of pain after meals, and a loss of thirty pounds in weight. X-ray showed a characteristic annular deformity near the pylorus. Operation confirmed the diagnosis. This annular deformity is typical of early carcinoma of the pylorus.

(g) Man, 26 years of age, complained of pain in the epigastrium for one year, later he had vomiting. No mass was palpable. X-ray showed the characteristic annular deformity, which was perfectly constant in all the plates. At operation a large mass was found which proved to be cancerous. The defect in the X-ray was out of all proportion to the lesion. This patient died one year later of metastasis.

(h) Woman, age 28 years, complained of pain in the stomach and a rumbling of gas which was relieved by vomiting. No history of injury or loss of weight, X-ray showed a diaphragmatic hernia. No physical signs of this hernia could be elicited.

(i) Man, age 37 years, had attacks of pain in the abdomen for one year. About a year ago an abscess formed in the region of his right hip; this was opened and drained. One month later the abscess recurred. X-ray shows an oval shadow at the crest of the right ilium. Bismuth was injected into the sinus in the hip, and it extended within $1\frac{1}{2}$ inches of the small concretion. At operation a ruptured retrocaecal appendix was found, which was removed and the sinus promptly cleared up.

OPHTHALMOLOGICAL AND OTO-LARYNGOLOGICAL SECTION

The eighty-eighth regular meeting of the Ophthalmological and Oto-Laryngological Section, held January 26, 1917, in the Cleveland Medical Library, Doctor Wolfenstein in the chair.

Presentation of Cases

Doctor Wolfenstein presented a young woman with almost complete congenital absence of the lachrymal puncta and the greater portion of the canal-

iculi. On one lid he had succeeded in relieving the lachrymation by slitting the remains of the lower canaliculi, and intends doing the same with the other, but brought the patient in beforehand in order that the members might see the condition.

Dr. W. H. Tuckerman presented a man, aged 48 years, with a growth in the nasal pharynx. Wassermann negative. An examination of specimen removed was reported by the pathologist as inflammatory tissue, but the history and progress of the case gives strong evidence of probable malignancy.

Program

Dr. L. E. Brown reviewed the literature of pneumoliths and reported two interesting cases coming under his observation. He had several of the pneumoliths of one of these patients to exhibit.

None of the members present had observed patients with this condition or if they had, had failed to recognize the condition.

The symptoms of one of these patients was very similar to that of severe bronchitis with violent attacks of coughing, and raises the question if there are not cases of this sort overlooked by mistaken diagnosis.

Dr. Wm. B. Chamberlin reported several interesting cases of foreign body in the oesophagus and trachea, and also one case of extensive diverticulum of the oesophagus. He showed the X-ray plates of the cases reported.

Doctor Quittner's paper was a plea for a more extensive and careful examination of school children in order to detect the defective hearing and correct the causes thereof if possible.

In discussion Doctor Chamberlin suggested that this would be a paper suitable for a general meeting of the Academy.

COUNCIL MEETING

At a meeting of the Council of the Academy of Medicine, held Tuesday, February 13, 1917, at the University Club, the following members were present: The President, Doctor Updegraff, in the chair; Doctors Birge, Bruner, Bunts, Follansbee, Humiston, Karsner, Klaus, Lenhart, Sanford, Sawyer, Tuckerman, Weir, and by invitation, Doctor Lichty.

The minutes of the last meeting were read and approved.

On motion the following applicants were elected to active membership in the Academy:

I. M. Jarzynski,
Frank J. Keeley,
Francis G. Leonard,
Robert J. May,
H. G. McCarty,
Otis F. Simonds,
S. W. Smolik,
James N. Wyehgel,
Edmund K. Zaworski.

On motion the names of the following applicants for membership were ordered published:

For active membership:

H. L. Bard,
Clinton H. Bell,
Frank P. Charvant,
Homer B. Corlett,
Geo. M. Kinsey,
Paul O. Moore,
Rudolph S. Reich,
L. J. Smith,
R. E. Stepfield,
Arthur R. Timme,
Eugene Warren,
C. H. Verovitz.

For associate membership:

J. E. Clivenbaum.

The names of the following applicants were recommended:

C. D. Ellis,

William O. Krauss,

C. H. Riemenschneider,

William E. Wells.

A question of eligibility was raised. On motion it was ordered that these names be published if the chairman of the membership committee received assurance that the applicants do not practice sectarian medicine as defined in the constitution and by-laws.

On motion, Dr. H. E. Mitchell was reinstated in active membership to take effect on the payment of the current dues and one year's dues in arrears.

On motion the following resignations were accepted.

A. J. Cook,

Kate Johnson Harris.

Dr. Sanford reported for the Library Board that arrangements had been made for the use of the auditorium at the Medical Library upon a basis of \$1.00 per member for the current year.

The Secretary reported that he had arranged to have Mr. Harding operate the projectoscope at the rate of \$2.00 per evening.

Dr. Follansbee reported for the committee appointed to consider the relationship which should obtain for the ensuing year between the *Cleveland Medical Journal* and the Academy, that the committee had carefully canvassed the situation and that in view of all the circumstances and the fact that charges were now being contemplated by the management which would increase the usefulness of the journal to the society, the committee recommended that the same relation which obtained last year be continued for the present year, to wit: The Academy to pay a subscription price of \$2.00 to the *Cleveland Medical Journal* for each active member of the Academy.

Motion to approve was made and seconded.

The motion was discussed by Drs. Sawyer, Updegraff, Weir, Karsner, Follansbee and Tuckerman.

There being no further discussion, the previous question was called and the report of the committee was approved.

Dr. Sanford reported that he had received 150 replies so far to the questionnaire sent out regarding fee bills.

He also presented in detail his suggestion for a press committee and read a draft of a proposed letter to the editors of the daily newspapers outlining the scope of and offering the co-operation of such a committee.

On motion the Council approved the plan and substance of the letter.

Dr. Klaus asked for the following appointments to the membership committee:

K. E. Ochs,

F. J. Kuta,

H. E. Mitchell.

Request approved.

Dr. Follansbee asked to appoint Dr. F. P. Corrigan as third member of the Legislative Committee. Request approved.

Dr. Karsner, Chairman of the Experimental Medicine Section, requested the Council to authorize expenses for an out-of-town speaker for that section. The Secretary moved that the request be granted. Motion seconded and carried.

Dr. Lichty again suggested the desirability of a meeting of the Fifth Councillor District in Cleveland some time in March. No action was taken.

ROSTER OF OFFICERS AND MEMBERS OF THE ACADEMY OF MEDICINE OF CLEVELAND FOR 1917

The list published below includes only those whose dues were received by the Secretary-Treasurer. Errors in name or address should be reported to J. E. Tuckerman, 733 Osborn Building, at once to aid in prompt correction.

This list as published constitutes the mailing list of The Journal, and any active member failing to receive his Journal is requested to write for a copy. No name has been intentionally omitted. If your name does not appear, kindly notify the Secretary.

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C. H. LENHART, 1917

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C. F. HOOVER, 1915

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1912, 1913, 1914, 1915, 1916, 1917

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HOWARD T. KARSNER, Experimental Medicine

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W. H. WEIR, 1916, 1917, 1918

S. L. BERNSTEIN, 1916, 1917, 1918

F. E. BUNTS, 1917, 1918, 1919

R. H. BIRGE, 1917, 1918, 1919

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R. E. SKEEL

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One appointment held open for special work.

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H. L. SANFORD

Appointments held open for special work by
permission of the Council

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E. O. HOUCK
K. E. OCHS
F. J. KUTA
H. E. MITCHELL

Two appointments held open.

Program Committee

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WM. P. ALPERS
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A. B. EISENBREY, Experimental Medicine
W. H. TUCKERMAN,
Ophthalmological and Oto-Laryngological
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W. C. FAIR, Veterinarian

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Webster, H. H.....4234 Pearl Rd.

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(Paid up for 1917)

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Breck, Theo. B.	653 East 105th St.	Englander, Simon	1021 Prospect Ave.
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Buel, J. J.	The Guardian Bldg.	Freedman, E. F.	1021 Prospect Ave.
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Bunts, Frank E.	1021 Prospect Ave.	Friedman, N. E.	5455 Broadway Ave.
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Chamberlin, Wm. B.	1021 Prospect Ave.	Gernhard, W. E.	1921 West 65th St.
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Crile, Geo. W.	1021 Prospect Ave.		

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Hannum, E. A.	The Rose Bldg.	Landgrebe, Wm. A.	10507 Superior Ave.
Hannum, Eugene S.	3076 West 51st St.	Lanzer, A. H.	1432 Addison Rd.
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Hill, Walter C.	1021 Prospect Ave.	Linn, Fred W.	6110 Clinton Ave.
Hobson, John F.	17618 Detroit Ave.	Lower, W. E.	1021 Prospect Ave.
Hobson, W. S.	1021 Prospect Ave.	Lowman, J. H.	1807 Prospect Ave.
Hole, Charles M.	8920 Cedar Ave.	Luck, Henry C.	The Rose Bldg.
Hooper, Franklin H.	2767 West 25th St.	Lueke, A. W.	1780 East 55th St.
Hoover, C. F.	The Rose Bldg.	Lupeson, H.	6408 St. Clair Ave.
Horne, E. C.	9011 Broadway Ave.		
Hosick, W. A.	10631 Euclid Ave.	McDonald, C. L.	The Anisfield Bldg.
Houck, E. O.	4911 Franklin Ave.	McGannon, A. C.	6603 Lorain Ave.
Howard, A. B.	The Rose Bldg.	McGay, N. P.	906 East 105th St.
Howland, A. P.	The Colonial Arcade	McGee, J. B.	10502 Wade Park Ave.
Hribal, W. F.	2363 East 85th St.	McNamara, Frances X.	8908 Superior Ave.
Humiston, W. H.	The Rose Bldg.	McNamee, E. P.	14507 Detroit Ave.
Hutchins, Fannie C.	The Rose Bldg.	McPeck, E. E.	8303 Hough Ave.
Hyde, A. G.	Cleveland State Hospital		
Hyde, Wm. H.	8411 Clark Ave.	MacFarland, Chas. H.	Cleveland City Hospital
		MacLeod, George D.	1556 Addison Rd.
Ingalls, Norman W.	W. R. U. Medical College	Mandel, M. M.	The Erie Bldg.
Ingersoll, J. M.	1021 Prospect Ave.	Manley, O. T.	The Rose Bldg.
Irwin, A. F.	2219 Fairmount Rd.	Manley, R. M.	The Schofield Bldg.
Irwin, Walter J.	10516 St. Clair Ave.	Manning, W. J.	W. 65th St. & Detroit
		Marine, David	W. R. U. Medical College
Jacobs, P. A.	The Rose Bldg.	Maschke, Alfred S.	1021 Prospect Ave.
Jarzynski, I. M.	1155 East 79th St.	Masenhimer, H. W.	The Guardian Bldg.
Jenkins, Alfred A.	1721 East 55th St.	Maska, John E.	2184 West 14th St.
Jenkins, Henry	1845 East 75th St.	Matsuka, Ignatius W.	5496 Broadway Ave.
Jones, Arthur S.	1021 Prospect Ave.	May, R. J.	14200 Detroit Ave.
Jones, J. Arthur	The Rose Bldg.	Medlin, W. A.	3316 West 25th St.
Jones, Nathaniel M.	The Guardian Bldg.	Meek, J. A.	846 East 152nd St.
		Merrick, W. E.	1021 Prospect Ave.
Kahn, M.	East 55th St. & Central	Metz, R. B.	The Guardian Bldg.
Karsner, Howard T.	2021 East 89th St.	Metzenbaum, M. T.	The Rose Bldg.
Keeley, Frank J.	13441 Euclid Ave.	Miller, Amanda H.	2443 East 55th St.
Kelker, H. C.	9854 Lorain Ave.	Miller, Theodore	1836 Euclid Ave.
Kelley, S. W.	2255 East 55th St.	Miner, Irving C.	6035 Superior Ave.
Kennerdell, T. R.	3105 West 25th St.	Mitchell, H. E.	Warren Rd. & Detroit
Kern, Frank J.	6202 St. Clair Ave.	Mizer, Thos. J.	10411 Lake Ave.
Kerr, I. J.	The Guardian Bldg.	Mohrman, Frank H.	11636 Detroit Ave.
Keyes, E. W.	6503 Detroit Ave.	Monaghan, E. P.	3372 East 93rd St.
King, Hubert C.	1460 Lauderdale Ave.	Monson, S. H.	The Anisfield Bldg.
Kinsey, Geo. M.	5605 Detroit Ave.	Moore, J. M.	6726 St. Clair St.
Klaus, E.	1699 West 25th St.	Moorehouse, G. W.	1110 Euclid Ave.
Klaus, M. H.	4506 Lorain Ave.	Morgan, J. B.	7305 Lorain Ave.
Knowlton, L. G.	Berea, Ohio	Morrill, Gordon N.	2047 East 9th St.
Kochmit, Matthew G.	4918 Broadway Ave.	Morton, F. J.	4506 Lorain Ave.
Kofron, J. V.	5312 Broadway Ave.	Munsie, James	1632 East 65th St.
Kollar, J. B.	1846 East 55th St.	Mussun, Wm. G.	East 71st & Superior
Konrad-Filipiak, Frances	6827 Forman Ave.		
Kopfstein, F. T.	3020 Superior Ave.	Nachtigall, B.	3093 West 25th St.
Kotershall, J. J.	2841 West 25th St.	Nash, A. C.	10502 St. Clair Ave.
Krapohl, H. W.	10508 Superior Ave.	Neary, E. P.	10217 St. Clair Ave.
Krause, C. R.	1860 East 81st St.	Nelson, Chas. F.	The Schofield Bldg.
Krauss, Wm. G.	4506 Lorain Ave.	Neubauer, Bernard B.	1021 Prospect Ave.
Krebs, P. H.	2736 West 25th St.	Neuberger, John	1544 West 25th St.
Kurlander, J. J.	1021 Prospect Ave.	Neuberger, Joseph A.	6424 St. Clair Ave.
Kurtz, Harry B.	The Rose Bldg.	Newcomb, R. B.	The Illuminating Bldg.
Kuta, F. J.	7326 Broadway Ave.	Norton, F. B.	2057 East 79th St.
		Nungesser, J. J.	7216 Superior Ave.
Ladd, D. W.	1021 Prospect Ave.	Nuss, John C.	5329 Fleet Ave.
Laffer, Walter B.	The Rose Bldg.	Nuss, William	11636 Detroit Ave.

Active Members—Continued

O'Connell, C. A.	6503 Detroit Ave.	Season, E. H.	10403 Euclid Ave.
O'Malley, Geo. P.	7432 Detroit Ave.	Seidel, R. R.	Bedford, Ohio
O'Neill, Geo. M.	8703 Superior Ave.	Selman, David	The Rose Bldg.
		Sexton, F. E.	The Rose Bldg.
Oakley, F. A.	The Anisfield Bldg.	Seward, I. E.	1021 Prospect Ave.
Ochs, K. E.	2047 St. Clair Ave.	Shackleton, W. E.	1021 Prospect Ave.
Ochsner, Rudolph J.	16315 Clifton Blvd.	Sharp, Jay D.	Euclid and E. 79th St.
Oldenburg, Fred C.	3103 West 14th St.	Sharp, W. D.	1500 East 105th St.
Opperman, P. J.	1147 East 105th St.	Sherman, H. G.	The Rose Bldg.
Ormsby, H. B.	The Rose Bldg.	Shirey, O. M.	1021 Prospect Ave.
Osborn, Wm. O.	1021 Prospect Ave.	Shirkey, U. S. L.	6404 Lorain Ave.
Osmond, J. D.	1021 Prospect Ave.	Shoemaker, John A.	Berea, O.
Oster, L. W.	3403 Superior Ave.	Shube, Herman	1382 East 105th St.
		Shupe, T. P.	1021 Prospect Ave.
Parke, Milton J.	The Schofield Bldg.	Silbermann, Jacob	3962 St. Clair Ave.
Parker, C. B.	1961 Ford Drive	Sill, R. H.	1694 West 25th St.
Parsons, Willis T.	11712 Detroit Ave.	Simonds, Otis F.	The Rose Bldg.
Paulin, Norman O.	5012 Euclid Ave.	Skeel, A. J.	1834 East 65th St.
Pav, A. F.	2648 East 55th St.	Skeel, R. E.	1021 Prospect Ave.
Pearse, A. J.	10427 St. Clair Ave.	Sloan, Harry G.	1021 Prospect Ave.
Perkins, R. G.	W. R. U. Medical College	Smigel, P. S.	7211 Broadway Ave.
Perry, W. H.	The Rose Bldg.	Smith, C. W.	2107 East 89th St.
Peskind, A.	2414 East 55th St.	Smith, D. B.	The Arcade
Peskind, B.	2414 East 55th St.	Smith, George Seeley	1021 Prospect Ave.
Peskind, S.	2414 East 55th St.	Smith, Jos. T., Jr.	The Rose Bldg.
Peterka, Edward	5026 Broadway Ave.	Smolik, S. W.	2677 Woodhill Rd.
Peters, Walter	7720 Superior Ave.	Snow, Minabel	4614 Franklin Ave.
Phillips, John	1021 Prospect Ave.	Sollman Torald	W. R. U. Medical College
Pitkins, Carlos E.	1021 Prospect Ave.	Spenzer, John G.	The Rose Bldg.
Placak, Jos. C.	The Rose Bldg.	Spicer, D. M.	1406 West 25th St.
Plent, J. B.	5634 Broadway Ave.	Spitzig, B. L.	The Rose Bldg.
Pomeroy, L. A.	2073 East 9th St.	Spurney, A. B.	2584 East 55th St.
Pope, Carlyle	1021 Prospect Ave.	Spurney, A. F.	1021 Prospect Ave.
Powell, E. A.	The Schofield Bldg.	Staral, J. A.	The Rose Bldg.
Prendergast, David A.	1110 Euclid Ave.	Stepp, Morris D.	Payne and E. 24th St.
Prudhomme, A. J.	3906 Lorain Ave.	Stern, Walter G.	The Schofield Bldg.
		Steuer, D. B.	3735 Woodland Ave.
Quayle, John H.	1110 Euclid Ave.	Steuer, Joseph C.	The Rose Bldg.
Quigley, W. J.	11636 Detroit Ave.	Stewart, J. R.	The Rose Bldg.
Quittner, Samuel S.	5512 Woodland Ave.	Stoelzing, C. A.	759 East 105th St.
		Stone, Alvin A.	5511 Euclid Ave.
Ravitz, Leonard R.	2291 East 55th St.	Stone, E. H.	5607 Euclid Ave.
Rasing, W. B.	1395 East 9th St.	Stoner, Willard C.	1110 Euclid Ave.
Reich, Leo	12402 West Madison Ave.	Stotter, James	1148 Euclid Ave.
Reich, Rudolph S.	Buckeye Rd. & E. 89th St.	Strauss, Abraham	1021 Prospect Ave.
Rhodes, E. B.	13425 Euclid Ave.	Stuart, Charles C.	The Guardian Bldg.
Riegelhaupt, Samuel	2162 East 55th St.	Sunkle, Robert H.	2107 Clark Ave.
Rieger, W. H.	Leader-News Bldg.	Suva, John S.	2370 East 87th St.
Rigelhaupt, Wm.	1814 West 25th St.	Szczytowski, A. E.	E. 79th St. and St. Clair
Robertson, Arthur E.	Broadview and Pearl Rd.		
Rockwood, Harry L.	13506 Kinsman Rd.	Taft, Robert E.	9104 Union Ave.
Rogers, H. W.	The Guardian Bldg.	Tarr, H. M.	1836 Euclid Ave.
Romig, E. F.	13586 Euclid Ave.	Tarr, R. T.	5466 Broadway Ave.
Rosenberg, E.	8231 Woodland Ave.	Taylor, A. C.	13576 Euclid Ave.
Rosewater, Eugene D.	1021 Prospect Ave.	Taylor, Lester	Marfa, Texas
Rosewater, N.	1021 Prospect Ave.	Taylor, T. J.	9410 Pierpont Ave.
Roth, Frank	8623 Quincy Ave.	Thomas, Geo. F.	1021 Prospect Ave.
Rowland, V. C.	1021 Prospect Ave.	Thomas, J. J.	1110 Euclid Ave.
Rubin, I. M.	5714 Scovill Ave.	Thomas, Oscar T.	1021 Prospect Ave.
Ruh, H. O.	2500 East 35th St.	Thomas, Robert L.	7820 Hough Ave.
Russell, Geo. C.	Willoughby, O.	Thompson, Clive W.	E. 118th and St. Clair
Rust, E. G.	The Lennox Bldg.	Thornton, Wm. J.	11308 St. Clair Ave.
		Tierney, J. S.	The Lennox Bldg.
Sager, B. E.	The Rose Bldg.	Tims, W. A.	1488 East 105th St.
Sampliner, W. E.	The Rose Bldg.	Townsend, Oscar E.	5724 Franklin Ave.
Sanford, Henry L.	1021 Prospect Ave.	Towslee, Lillian G.	1021 Prospect Ave.
Saunders, E. D.	Lakeland & Detroit Ave.	Tripp, Ira A.	The Rose Bldg.
Sawyer, J. P.	The Rose Bldg.	Tuckerman, J. E.	1021 Prospect Ave.
Schlesinger, Wm. A.	5409 Broadway Ave.	Tuckerman, W. C.	1021 Prospect Ave.
Schlink, A. G.	10208 Euclid Ave.	Tuckerman, W. H.	1021 Prospect Ave.
Schmoldt, F. J.	The Rose Bldg.	Tupper, Geo. B.	9406 Cedar Ave.
Schnee, R. G.	The Bangor Bldg.	Turrell, R. L.	1109 East 79th St.
Schott, Morris	1355 East 55th St.		
Scott, A. Clynton	6523 Euclid Ave.	Updegraff, R. K.	7511 Franklin Ave.
Scott, N. Stone	The Citizens Bldg.	Upton, George D.	The Leader-News Bldg.
Scully, A. P.	2518 Detroit Ave.		

Active Members—Continued

Wagner, H. G.....The Rose Bldg.
Wagner, L. H.....3056 Payne Ave.
Wakefield, E. F.....Chagrin Falls, O.
Ward, C. E.....1021 Prospect Ave.
Warner, A. R.....Lakeside Hospital
Warner, W. C.....1742 East 89th St.
Warren, EugeneSt. Clair and E. 138th St.
Weber, O. A.....1021 Prospect Ave.
Webster, S. J.....4234 Pearl Rd.
Wedler, C. R.....4504 Superior Ave.
Weir, William H.....1021 Prospect Ave.
Wells, J. H.....1858 East 55th St.
West, K. S.....1110 Euclid Ave.
Wheelock, L. A.....12113 Euclid Ave.
White, C. C.....1532 East 55th St.
Whitslar, W. H.....The Schofield Bldg.
Wille, Clarence W.....The Rose Bldg.
Williams, C. D.....The Rose Bldg.

Williams, T. B.....6403 Quincy Ave.
Wimer, J. S.....918 East 76th St.
Witter, C. Orville5415 Bridge Ave.
Wolfenstein, Leo.....The Rose Bldg.
Wood, Frederick J.....W. 25th and Church Ave.
Woolgar, W. J. W.....9304 Cedar Ave.
Wychgel, James N.....8123 Jones Rd.
Wyckoff, C. W.....1021 Prospect Ave.

Yarian, Norman C.....7405 Detroit Ave.
Yoder, H. E.....8900 Lorain Ave.
Yoder, Ivan I.....W. 25th and Detroit
Young, Samuel A.....4021 East 71st St.
Young, T. C.....3524 East 93rd St.

Zaworski, E. K.....6500 Fleet Ave.
Zimmer, Otto F.....4812 Clark Ave.
Zwick, I.....799 East 88th St.

Non-Resident Members

(Paid up for 1917)

Ailes, M. D.....Warren, O.
Andrews, Wm. B.....Kent, O.
Bauer, M. M.....Lake, O.
Brown, L. E.....Akron, O.
Carpenter, M. W.....Willoughby, O.
Case, C. E.....Ashtabula, O.
Chamberlin, Robt. B.....Twinsburg, O.
Clark, Colin R.....Youngstown, O.
Cotton, C. E.....Ashville, N. C.
Cox, S. S.....Lorain, O.
Cozad, H. IrvingCuyahoga Falls, O.
Cushing, C. H.....Elyria, O.
Davis, James R.....Painesville, O.
DeWitt, J. P.....Canton, O.
Donaldson, John B.....Lorain, O.
Dudley, HarlanJefferson, O.
Everhard, N. S.....Wadsworth, O.
Gamble, R. V.....Elyria, O.
Gill, GeorgeElyria, O.
Handler, S.....Rochester, N. Y.
Hart, Wm. E.....Elyria, O.
Hill, Arthur J.....Canton, O.
Hoover, Chas. S.....Alliance, O.
Hopkins, O. A.....Middlefield, O.
Hubbell, W. B.....Elyria, O.
Jacobs, H. H.....Akron, O.
Jacobson, J. H.....Toledo, O.
Jameson, G. C.....Oberlin, O.
Jones, D. J.....Youngstown, O.

Leonard, F. E.....Oberlin, O.
Lincoln, WalterCocoa, Fla.
Maynard, O. T.....Elyria, O.
Metcalf, H. M.....Elyria, O.
Monosmith, Olney B.....Lorain, O.
Painter, A. M.....Youngstown, O.
Peterson, H. D.....Sandusky, O.
Radcliffe, Geo. H.....Peninsula, O.
Rankin, Geo. T.....Akron, O.
Reynolds, R. D.....Green Spring, O.
Sawyer, Carl W.....Marion, O.
Schilling, C. E.....Canton, O.
Schuffell, H. M.....Canton, O.
Searl, W. A.....Cuyahoga Falls, O.
Selby, C. D.....Toledo, O.
Smith, F. K.....Warren, O.
Steinke, Carl R.....Akron, O.
Suker, Geo. F.....Chicago, Ill.
Thatcher, W. F.....Oberlin, O.
Vincent, F. W.....Baguio, P. I.
Walker, A. B.....Canton, O.
Welch, H. E.....Youngstown, O.
Weston, Herbert T.....Hartford, Conn.
Wolf, Leslie A.....Ravenna, O.
Zimmerman, H. A.....Youngstown, O.
Zininger, Geo. F.....Canton, O.

Associate Members

(Paid up for 1917)

Dentists

Barnes, Varney E.....The Rose Bldg.
Price, Weston H.....10406 Euclid Ave.
Teter, Chas. K.....The Rose Bldg.
Teter, Wm. C.....The Rose Bldg.

Pharmacists

Hankey, Wm. T.....1382 West 9th St.
Muhlhan, O. E.....10508 Cedar Ave.
Selzer, E. R.....1600 East 117th St.

Veterinarians

Backus, Newell D.....Elyria, O.
Bisbee, W. A.....5734 Portage Ave.
Borsus, Mihaly3482 Woodland Ave.
Burrows, Samuel2317 East 89th St.
Classey, Wm. J.....2027 East 105th St.
Cooley, A. S.....E. 40th and Perkins

Miscellaneous

Olivenbaum, J. E.....Lutheran Hospital
Patten, Bradley M.....W. R. U. Medical College
Peterson, E. A.....Board of Education
Stewart, G. N.....W. R. U. Medical College
Waite, F. C.....W. R. U. Medical College

Active Members

LISTED FROM 1916 ROSTER

Bell, R. P.....1021 Prospect Ave.
 Belt, J. H.....2510 East 55th St.
 Benner, Wallace J.....16803 Detroit Ave.
 Blahd, M. E.....The Anisfield Bldg.
 Bonta, M. B.....The Rose Bldg.
 Bowden, D. P.....Leader-News Bldg.
 Brett, J. H.....Cedar and E. 105th St.

Clarke, RobertThe Euclid-Doan Bldg.
 Corrigan, John F.....11020 Superior Ave.
 Coy, N. L.....9720 Madison Ave.
 Curtis, Nicholson F.....2045 Adelbert Rd.

Darby, J. C.....1077 East 105th St.
 Davis, H. H.....1730 West 25th St.
 Deacon, Edward M.....The Rose Bldg.

Farnsworth, G. Bourne.....2047 East 9th St.
 Furrer, Helen Hempstead.....1890 East 97th St.

Garrett, E. W.....10509 Euclid Ave.

Hitchings, Frederic W.....10406 Euclid Ave.
 Hoyer, W. D.....The Rose Bldg.

Krauss, L. W.....5116 Woodland Ave

MacLeod, J. J. R.....W. R. U. Medical College
 McMichael, J. C.....10502 St. Clair Ave.

Stone, Chas. W.....The Rose Bldg.
 Suchy, F. H.....8613 Quincy Ave.

Wahl, H. R.....Lakeside Hospital
 Weber, W. C.....The Rose Bldg.
 Wirtshafter, MorrisThe Anisfield Bldg.

Non-Resident Members

LISTED FROM 1916 ROSTER

Bliss, C. B.....Sandusky, O.
 Boyd, J. P.....Akron, O.

Fraunfelter, J.....Canton, O.

Hayford, H. S.....Toledo, O.
 Herrick, H. J.....Hudson, O.
 Hoover, D. E.....Warren, O.
 Horn, H. W.....Wichita, Kansas

Ingersoll, A. J.....Mentor, O.

Knox, J. D.....Niles, O.

Larimore, F. C.....Mt. Vernon, O.
 Leroy, B. R.....Athens, O.
 Logan, Geo. M.....Akron, O.
 Lowe, J. W.....Mentor, O.

Miller, M. F.....Wadsworth, O.

Oaks, I. N.....N. Ridgeville, O.

Patton, C. C.....Vermilion, S. D.

Shumaker, D. W.....Canal Dover, O.

Weber, John H.....Akron, O.

Associate Members

LISTED FROM 1916 ROSTER

Dentists

Stephan, John F.....The Guardian Bldg.

Pharmacists

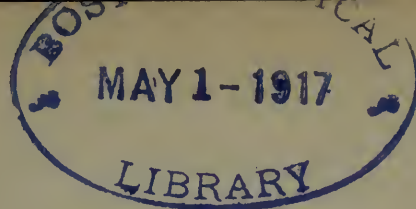
Benfield, C. W.....Payne and E. 55th St.
 Fox, W. M.....9702 Cedar Ave.
 Hopp, L. C.....1104 Euclid Ave.
 Sherwood, H. J.....The Rose Bldg.
 Winter, Carl2812 East 79th St.

Veterinarians

Dunn, L. J.....City Hall
 Johns, C. A.....Medina, O.
 Redhead, W. H.....3225 W. 65th St.
 Way, Rexford D.....E. 40th and Perkins
 Wise, Wm. F.....Medina, O.

Miscellaneous

Aikens, Prof. H. A.....2036 Cornell Rd.



The Cleveland Medical Journal

Vol. XVI

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No 3

FOREWORD

In July, 1859, the Cleveland Medical Gazette made its appearance. The editor of this journal, which was the first periodical given up to medical subjects to be published in Cleveland, was Dr. Gustav C. E. Weber. The Gazette lasted until 1861, when it ceased to exist, owing to the storm and stress of the early days of the Civil War. For a period of twenty-four years, Cleveland boasted no medical periodical. In 1885 a new journal appeared under the editorship of Dr. A. R. Baker and Dr. S. W. Kelly. It was called the Cleveland Medical Gazette, evidently with the purpose of perpetuating the title of Doctor Weber's publication. This periodical held the field alone until 1892, when a rival, The Western Reserve Medical Journal, was established with Dr. Henry S. Upson as editor. The latter publication continued until 1896 when its name was changed to The Cleveland Journal of Medicine, and Dr. P. Maxwell Foshay joined Dr. Henry S. Upson on the editorial staff. In 1902 The Cleveland Medical Gazette and The Cleveland Journal of Medicine became one under the name of The Cleveland Medical Journal. Dr. P. Maxwell Foshay was the editor of this new journal with Dr. Edward Perkins Carter and Dr. Edward Lauder as his assistants. Since then The Cleveland Medical Journal has appeared continuously and is now in its 16th volume. In 1905 Doctor Foshay resigned the editorship and his place was taken by Doctor Carter, who held the office until 1907. Dr. William H. Weir succeeded Doctor Carter, and edited the Journal until 1912, when Dr. Oscar T. Schultz took over the editorship. Doctor Schultz resigned after a year of service. The Board of Directors were unable to find a man who was both qualified to be editor of the Journal and who was

willing to assume the responsibilities of the position, so Miss Ruth F. Stone, the Business Manager, was appointed Acting Editor until a permanent editor could be obtained. Since that time, with admirable enthusiasm, untiring energy and rare tact, Miss Stone has filled the positions of editor, business manager and advertising manager and has succeeded in keeping the Journal afloat.

With the present issue the editorial policy of The Cleveland Medical Journal finds itself once again in new hands. A Board of Editors has been appointed. The Board hereby offers greeting to its readers and wishes to make some explanation for its being. The Directors of the Journal honored a number of men by severally offering to them the post of editor. No one man was willing to take on these duties, on account of the labor which it entailed. Interested as each man was in the work, no one felt that he could do justice to the office on account of the crowding duties which he already shouldered. It was suggested that an editorial board might assume jointly the task which one individual would find too onerous. Accordingly, this board of twenty-three members has been organized, and a plan has been adopted, whereby every member has well defined duties and clear-cut responsibilities. These duties and responsibilities have been assumed with a full realization of their significance and with but one object, the maintenance of a journal which shall be a credit to this community. It is the purpose of the Board to publish original articles of merit not only from the local profession, but also from sound writers from all parts of the country; to provide abstracts of current literature, and reviews of important books and to publish medical news which will be of interest to the readers of the Journal. In brief, the Board of Editors desires to serve the medical profession of Cleveland and to represent the best current thought and the highest aims of the profession at large. In order that this program, ambitious as it appears, may be carried out, the Journal must have the hearty co-operation of the local profession. This the Editors confidently expect, and in return pledge themselves to do their best for the Journal and for the medical public.

PULMONARY SYPHILIS. REPORT OF A CASE

BY RICHARD DEXTER, M. D.,

CLEVELAND

Before the discovery of the tubercle bacillus the diagnosis of pulmonary syphilis was not uncommon, and many cases which were undoubtedly of tuberculous origin were considered as syphilis. That syphilis of the lung is a rare condition was shown in Herxheimer's¹ review, which covers the literature of the subject up to 1906. He pointed out that even the pathological diagnosis is difficult on account of the similarity between the lesions of tuberculosis and of syphilis of the lung, and he considered that a majority of the cases described as syphilis of the lung were due in reality to tuberculosis. A careful review of the literature shows that since 1906 there are only reports of 13 cases of pulmonary syphilis on which autopsies had been performed. (Kuhn², Brandenburg³, Koch⁴, Schmorl⁵, Sugai⁶, Shingu⁷, Robertson⁸, Tanaka⁹, Keilty¹⁰). This small number of cases indicates how infrequently syphilis of the lung is found at post-mortem examination.

In the literature since 1905, I have been able to find reports of only 19 cases of syphilis of the lung, in which the evidence reported warranted that diagnosis (Stengel¹¹, Hughes and Wilson¹², Pelton¹³, Forsyth¹⁴, Roussel¹⁵, Burnham¹⁶, Kayser¹⁷, Blinder¹⁸, Culver¹⁹, Easton²⁰, Landis and Lewis²¹, Bauch²², Perret²³). This small number of cases also indicates the comparative rarity with which the clinical diagnosis of pulmonary syphilis is made. On the other hand it is probable that many cases of syphilis of the lung are not recognized. Nearly all the reported cases were believed, at first, to be cases of pulmonary tuberculosis; and only after study and elimination did the syphilitic origin of the trouble become apparent. Grandidier²⁴, and Dieulafoy²⁵ believed that syphilis of the lung is often overlooked, or else that it is considered to be tuberculosis or some other chronic pulmonary infection.

The pathological changes in the lung in pulmonary syphilis often bear a close resemblance to those of tuberculosis. Most authors agree that there are certain characteristics which make a differentiation between the two processes possible. The syphilitic lesions may be found in any portion of the lung, and may be either single or multiple. On the whole, there seems to be a tendency to involve the bases of the lung more frequently than the apices. At least, in

the advanced cases the bases seemed to be the seat of the older processes. The gummata are often found in close relation to the bronchi, often involving the walls of the bronchi. Radiating fibrous bands, which extend from the central portion of a lobe to the periphery, are commonly found in cases of long standing. These fibrous bands contract, and eventually cause great deformities of the lung, usually associated with bronchiectasis. This latter process is undoubtedly due to the invasion of the bronchial walls on the one hand, and to the contraction of the scar tissue on the other.

Tanaka⁹ believes that a chronic indurative process in the lung due to syphilis may exist without the formation of actual gummata. Cavity formation other than that due to the dilatation of the bronchi is very unusual. Almost without exception there is a marked thickening of the pleural surface over the diseased portion of the lung, usually followed by an obliteration of the pleural cavity. Microscopically the gumma may resemble the tubercle fairly closely. It is the consensus of opinion that the necrosis in the centre of the gumma is less marked than in the tubercle, and that the giant cells are fewer in number in the syphilitic process. All authors place considerable importance on the condition of the blood vessels. In lung syphilis the blood vessels are always described as being definitely diseased;—obliterating endarteritis and periarteritis occur. In his examination of five cases of pulmonary syphilis Tanaka⁹ found constantly a greater or less degree of increase in the smooth muscle of the bronchi which has not been described by other authors. All authors are agreed that the absence of tubercle bacilli in cut sections is of importance in the diagnosis. In only three cases (Koch⁴, Schmorl⁵, Keilty¹⁰) have organisms indistinguishable from the *spirochaeta pallida* been found.

The clinical course of syphilis of the lung is variable. As with gummata in other organs, such as the liver, or spleen, there may be no symptoms or physical signs to indicate the presence of the process; the condition may be recognized only at autopsy. The majority of cases have symptoms which point to disease of the lungs. Cough is a common and an early symptom; at first the cough is unproductive, but usually after a short time a great deal of purulent sputum is raised. Hemoptysis is common; while it is usually small in amount, a few instances of profuse repeated hemorrhages from the lungs have been reported. Shortness of breath, which is often entirely out of proportion to the apparent extent of the lung

involvement is a common complaint. Pain in the side is a common symptom. This is not to be wondered at when one considers the frequency with which the pleural surface is found involved at autopsy. There may be loss of weight; but in most cases even with extensive disease of the lungs, the loss of weight is conspicuous by its absence. Slight elevation of temperature is usually present at some time in the course of the disease. The fever is rarely high, and never constant. Sudden drenching sweats are common.

The site of the involvement of the lung is of interest. It has long been thought that syphilis was prone to attack the lower lobes of the lungs and especially the middle lobe of the right lung. (Grandidier²⁴, Pavlinoff²⁶, Salterthwaite²⁷). In 19 cases appearing in the literature since 1905 in which a diagnosis of pulmonary-syphilis seemed warranted by the facts, the distribution of the lesions as determined by physical signs or by the Roentgen ray was as follows:

Involvement of one or both apices without any involvement of base.....	9
Involvement of both apex and base.....	3
Involvement of right base alone.....	3
Involvement of left base alone.....	3
Involvement of middle lobe of right lung alone	1
	<hr/>
	19

This suggests, therefore, that syphilis attacks the apices of the lung as frequently as it does the bases.

There is nothing which is absolutely characteristic in the physical signs of syphilis of the lung. The physical signs are those which are associated with infiltration and fibrosis of the lung, with or without bronchiectasis as the case may be.

The diagnosis of pulmonary syphilis must be made by elimination. As I have said almost all cases at first are considered to be due to tuberculosis. Repeated failures to find the tubercle bacillus in the sputum leads to a search for some other causal agent. A history of syphilitic infection or the presence of indubitable manifestations of syphilis in the other parts of the body, will suggest that the lung condition is also due to syphilis. The presence of a positive Wassermann reaction in the blood or in the spinal fluid is

further presumptive evidence. The examination with the Roentgen ray serves to check the physical findings and to give additional information as to the extent and the location of the process in the lungs. The Roentgen ray is extremely valuable in observing the effect of anti-syphilitic treatment on the lesions. Finally the undoubted recession or disappearance of the symptoms and of signs of the disease under appropriate anti-syphilitic treatment is of considerable importance in determining the nature of the condition.

The following case is of interest because of its somewhat unusual course and because the manifestations of the disease in the lung differ from those which usually accompany syphilis of the lung.

Case I. H. B., male, aged 40, single, moulder, entered the medical wards of the Cleveland City Hospital on December 2, 1916. The patient had measles as a child. He had always been a hard worker. He contracted syphilis several years ago and took treatment for a short time. He had always used alcohol freely, and often to excess.

The present illness started three weeks before admission to the hospital, at which time the patient had irregular chills. On the next day he felt very weak and fainted twice. He was unable to work but did not have a repetition of the chills. He did not think that he had any fever at this time. One week after the onset of his illness he began to have sharp stabbing pain in the right side. This pain had been present ever since. He coughed a good deal but raised very little. He felt weak and sick and had occasional drenching sweats.

The physical examination showed a well developed and nourished male. The skin and mucous membranes were a little pale. The pupils were equal and reacted sluggishly both to light and to accommodation. There was a general shotty glandular enlargement. The examination of the anterior portions of the lungs showed no abnormalities. A fine friction rub was audible in the right axilla. The movement of the lower right chest was limited. Posteriorly there was a triangular area of very marked dulness over the lower portion of the right lung. The dulness began at the level of the 4th dorsal vertebra and extended 9 cm. to the right from the median line. At the level of the 8th dorsal vertebra the dulness extended 17 cm. to the right of the median line. The tactile fremitus was diminished over this area. Over the dull area exquisite tubular breathing was heard, and also medium sized moist râles which exploded very near the ear (consonanting râles). The

voice sounds were very loud and nasal. Whispered pectoriloquy was present. The examination of the heart showed nothing abnormal. The abdominal viscera were apparently normal. There was no demonstrable disease of the nervous system. The temperature was 100, pulse, 96, respirations, 24.

The examination of the blood showed hemoglobin 75%, red corpuscles 3,200,000; white corpuscles 10,000. The Wassermann reaction was strongly positive. The urine was negative. The



FIGURE 1

X-ray photograph showing condition of lungs shortly after admission to hospital.

sputum was examined repeatedly, but tubercle bacilli were never found in it. Exploratory puncture gave no fluid. Examination of the chest with the Roentgen ray showed a process at the hilus of each lung and an infiltration at the base of the right lung which corresponded with the area of dulness described above (Fig. 1).

The patient was observed for 8 days during which time the condition in the right lung did not change at all. During this time the temperature did not rise above 99.2°.

At the end of this period the patient was given three intramuscular injections of the biniodide of mercury, gr. $\frac{1}{4}$ each, after which he became salivated. It is interesting to note that after the first and third injections of the biniodide the patient had a sudden rise of temperature to 102° and 104.6° respectively, each elevation of temperature being associated with a chill and a drenching sweat. There was also a distinct increase in the size and number of râles over the affected area in the right lung but no other change in the physical signs occurred. After the salivation had receded, intra-

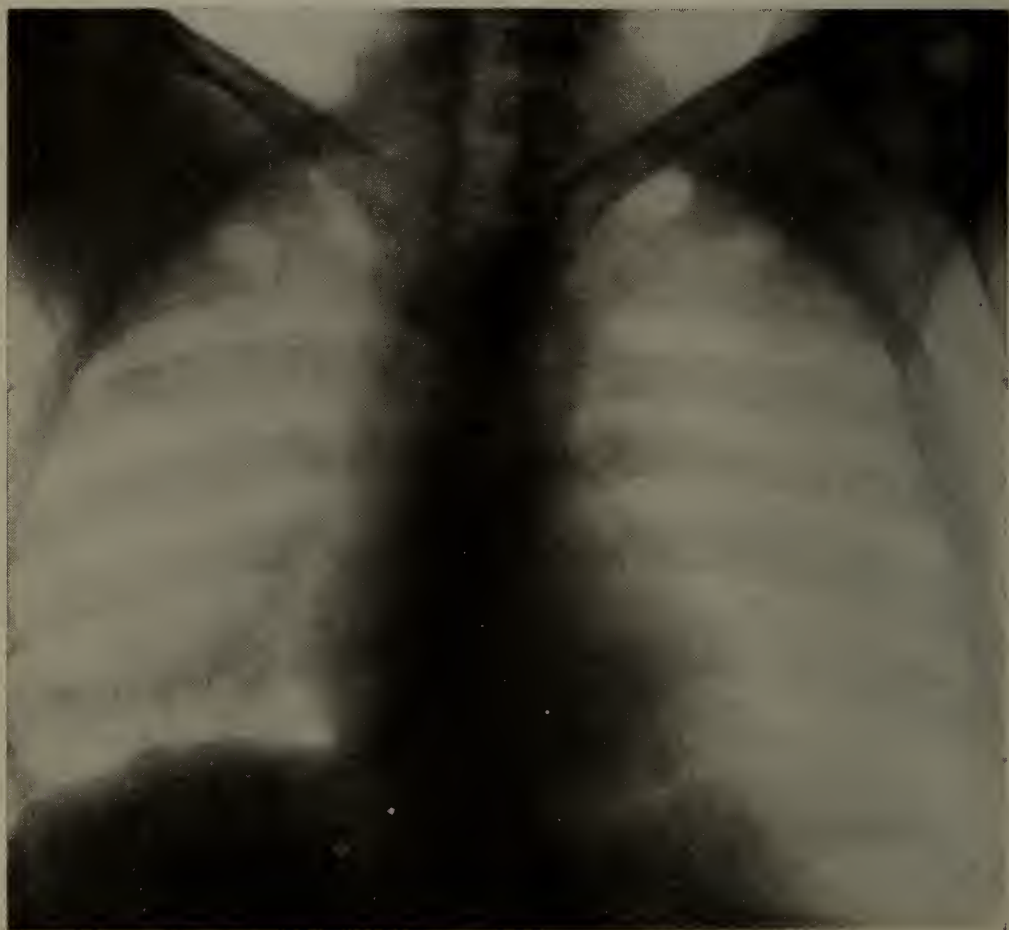


FIGURE 2

Condition of lung after treatment had been begun. Note lessening of process at right base.

venous injections of Diarsenol were given. The patient received 5 injections of Diarsenol during the next 5 weeks, making a total of 2.35 Gm. After the second injection the physical signs over the right lung diminished considerably. The dulness was not so marked. The egophony disappeared, although the voice sound was still louder over this area than in the unaffected portions of the lung. The râles were more numerous but they lost their consonant-

ing quality. The Roentgen ray examination showed a distinct lessening of the process at the right base. (Fig. 2). The Wassermann reaction on the blood was strongly positive.

On January 31st, 1917, the patient was discharged. Examination of the chest at this time showed that the excursion of the right base was practically equal to that of the left. The percussion note over the right base was slightly higher in pitch and shorter in duration than that over the left base. The breath sounds were of about



FIGURE 3

Condition of lungs at discharge from hospital, taken 7 weeks after Figure 1.

normal loudness, and although the expiration was still prolonged and somewhat high pitched the tubular breathing had disappeared. The vocal and tactile fremitus was only slightly increased over the right base. There were only a few large moist râles to be heard. The Wassermann reaction on the blood was still strongly positive. The Roentgen ray examination showed that there was still some

infiltration or thickening at the right base but the process was distinctly less than it had been at either of the previous examinations. (Fig. 3).

The history of syphilis and the presence of repeated positive Wassermann reactions is evidence enough that this patient was syphilitic. It is not unusual to see syphilis and tuberculosis or some other infection existing in the same individual, but the onset, the course and the physical findings in this case, are certainly not typical of a pulmonary tuberculosis. The repeated failures to find tubercle bacilli in the sputum may also be taken as further evidence against tuberculosis. If the condition had been due to one of the organisms which cause acute infections of the lung, the onset would in all probability have been more sudden, and the course would have been marked by more indications of an acute febrile condition. The physical signs in the lung were those of a definite infiltration at the right base, which apparently gave rise to but little fever. It is significant that there was no apparent change in the condition in the right lung for a period of ten days. The Roentgen ray examination showed a process at the roots of both lungs, as well as at the right base. The fact that the Roentgen ray examination showed definite diminution in the process after anti-syphilitic treatment had been instituted is of importance in the diagnosis. As far as I can find there is only one other case of pulmonary syphilis, in which serial Roentgenograms have been used to demonstrate the decline of the process under treatment (17). The rapid diminution in the physical signs, which occurred, taken with the lessening of the process as demonstrated by the Roentgen ray, seem to me to be of considerable value in confirming the supposition that the condition described was in very truth a syphilitic involvement of the lung.

That we did not find more signs of softening and of bronchiectasis in this case may be explained by the comparatively short duration of the process. It is only in the very rapidly advancing cases, or in those which are of long duration that signs of softening or of dilatation of the bronchi occur.

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- 615 Rose Building.

SOME OBSERVATIONS ON THE USE OF BLOOD TRANSFUSION

BY A. B. EISENBREY, M. D.,

CLEVELAND

Like many another of our much admired "modern" advances in medical and surgical procedure the conception of blood transfusion dates back to the ancients. Just as the removal of the axillary nodes before the removal of the breast for cancer was recommended in 1606 by Fabricius, so it was that blood transfusion was performed on Pope Innocent VIII in 1492 in an unsuccessful attempt to save his life. As a matter of fact the idea of such a procedure was not unknown among the ancient Egyptians.

Recognizing that the two chief obstacles to be overcome before transfusion could become clinically satisfactory were sepsis and the coagulation of the blood, it can be readily understood how it is that successful application of this measure is of comparatively recent date. A recital of the various technics that were tried during the early stages of the development of our present day methods would be of historical rather than of practical value. Suffice it to

say, however, that the use of cannulae, syringes and vessel to vessel methods is old. It was well recognized as early as 1714, that the use of dissimilar bloods, i.e., animals to man, was unsatisfactory.

Transfusion really began to come into general use in 1906 with the perfected Carrel method of blood vessel suture as practiced by Crile. Following a period when this was the method of choice the era of cannulae began. At first the effort was made to transfer the blood without exposure to the air and danger of coagulation by attaching the vessels of donor and patient in such a way that intima was in apposition with intima as in the suture method. Subsequently cannulae that were paraffined or treated so as to avoid clotting were used. It may be stated here that the foregoing direct methods have been superseded principally because of the difficulty of the technic and the impossibility of knowing the amount of blood transfused, altho sepsis and clotting were made practically negligible factors.

Today the indirect methods are enjoying the greatest popularity. These may be classified as the syringe methods, the paraffined receptacle methods, and the anticoagulant method. The first method was perfected by Lindeman, who used many large glass and metal syringes with which he withdrew blood from the donor and injected it into the patient through cannulae inserted into the veins of each. The syringes were thoroughly cleaned between each filling and emptying. Unger simplified this technic by interposing a two-way stop-cock between the cannulae in patient and donor in such a way that with one syringe it is possible to withdraw and inject the blood without having to detach the syringe or apparatus. The success of this method depends on the suggestion of Elsberg that an ether spray be kept playing on the syringe as a preventive of clotting.

Briefly, the "paraffined tube" method is the withdrawal of the blood from the vein of the donor into a closed glass receptacle that has been coated on the inside with paraffin to prevent clotting, and forcing it from this receptacle into a vein of the patient.

The anticoagulant or "citrate" method was perfected by Lewisohn and is the injection of a two-tenths percent mixture of sodium citrate and blood into a vein of the patient. This percentage has been found by experiment to be sufficient to prevent clotting and in this strength is nontoxic. Five grams of sodium citrate may be administered safely, but in a transfusion of 1,000 c.c. of the two-tenths per cent mixture only 2 grams would be introduced.

Various modifications of these methods have been suggested and are in use, but the underlying principles fall into the three groups mentioned. The many arguments for and against the different methods that have been advanced might be spoken of at length, but as in all matters of technic the individual prefers the method that is most satisfactory in his own hands.

Among the points to be considered in choosing a method for personal use are simplicity, ease and certainty of application, control of amount and rate of introduction, freedom from the danger of sepsis, clotting, or the introduction of air or other emboli, and last but not least the amount of operative disturbance of both patient and donor. After having been closely associated with transfusion work from the time of vessel to vessel suture, and having tried most of the current methods or having seen them used by their originators, the writer prefers as most sure and safe the syringe method with the Unger stop-cock.

Probably the most important addition to the subject of transfusion is the recognition of the fact that all human bloods even among members of the same family are not compatible. Agglutinative and hemolytic reactions are ever present and account for the frequently fatal "accidents" whenever transfusions are performed without having first tested out the bloods of donor and patient against each other. One not infrequently hears expressions of doubt as to the necessity of these preliminary tests. While incompatibilities are found in but a small percentage of cases they furnish the chief cause of death following transfusion and more than that, they belong to the category of preventable causes that are inexcusable. It is true that occasionally immediate transfusions must be performed as a strictly emergency measure when there is no time to be spent in performing any tests. These are chiefly in cases of acute hemorrhage in which disease especially of the blood or blood-forming organs has not added to the likelihood of incompatibilities. In such cases, however, the use of an actual blood relative as donor adds a certain factor of safety.

The blood incompatibilities have been extensively considered by Brem and an effort has been made to classify types. Various short or easy tests have been suggested, but in the writer's opinion the actual standard cross-tests, between washed cells of donor and serum of patient; washed cells of patient and serum of donor, con-

stitute the most reliable safeguard against "accident." These tests can be completed and readings made in about three hours.

When subsequent transfusions are done it is doubly necessary to have the tests made whether there was any suggestion of incompatibility with any of the donors tried before the first transfusion or not. If the second transfusion is to be made from the same donor used in the first, the necessity for preliminary tests is all the greater. As an example of this the writer saw forty-eight donors tried out for a single patient before a satisfactory one was obtained. Blood relationship is no guarantee of compatibility although the reverse occurs less often among such individuals.

Transfusion has come to be regarded as a specific cure in a small class of cases, while in a constantly widening field it is regarded as a most valuable therapeutic agent. In hemorrhage of a rapid and voluminous type it is indeed specific even in cases where the amount of blood transfused by no means equals the amount lost. It is well recognized that the vasomotor system has a wide range of compensatory action in the average individual, but that when the limit is reached cerebral anemia and irreparable damage results. In such cases the introduction of salt solution and the administration of vasoconstrictors accomplishes little of more than very brief value, while the introduction of whole blood immediately brings the volume of the circulating blood to an efficient degree even though the amount introduced is comparatively small. The immediate effects of transfusion in these severe hemorrhage cases is one of the most striking and dramatic sights in surgery. In hemorrhage of long duration and small amounts the immediate effects are not so pronounced, but in many such cases transfusion accomplishes in a few days what other measures have failed in, after weeks of use.

In addition to the mechanical benefits of the effect of blood volume increase from the transfusion one must consider the nutritive value of the plasma, the oxygen carrying power of the red cells, the hemostatic, hematopoietic, antitoxic and antibactericidal properties of the introduced blood. These properties have distinct values in various pathological processes.

The simple anemias of both the acute and chronic posthemorrhagic types are without question benefited most markedly. In the toxic and septic types the benefits are in many instances of but temporary value. The procedure in itself cannot be regarded as curative. In this respect, however, an important point

should be remembered. Pathologic processes that of themselves require all the vitality of the tissues in carrying on the primary vital functions of the body and combatting the further inroads of the disease, leave nothing for the processes of regeneration and repair. The introduction of new whole blood then mobilizes such properties of the tissues and permits a certain concentration of forces for the suppression or cure of the disease. Pernicious anemia belongs distinctly to this class.

In the purpuras transfusion has produced variable results, but the range of usefulness is likely to be increased. Severe hemorrhage in hemophilia, often a most discouraging and refractory condition, is overcome almost at once, but later recurrences are by no means prevented.

In malena neonatorum transfusion is practically specific. It cures when the use of horse serum has produced no results, and it is apparently more rapidly effective than the subcutaneous injection of human serum or whole blood. Certainly it is more immediately available than human serum when the time necessary for the separation of clot and serum is considered. The more recently advocated site for transfusion in infants is the longitudinal sinus. A small cannula is introduced into the sinus through the anterior fontanelle. The external jugular vein or a vein at the bend of the elbow are also available in infants a few days or even hours old.

Much was hoped for from transfusion in the case of certain of the infectious diseases, but it has found a very limited usefulness as a curative agent, although its temporary raising of vitality may count in aiding the other forces of the body in overcoming the infection. In some cases beneficial results have been attributed directly to the immune bodies, the healthy phagocytes or their activators and unknown beneficial bodies contained in the transfused blood. Possibly there may also be a neutralization or at least a dilution of toxins. The writer has seen remarkable results in cases of endocarditis in children where transfusion was done from donors immunized to the organisms obtained from the patient's blood cultures.

Transfusion has found a not inconsiderable field in asthenic conditions in general. In babies who have failed to "get a start in life," who do not respond to dietary management and are gradually fading out, a small transfusion will often turn the tide to a normal functional condition. Many cases taken to the surgeon for conditions of long standing that have reduced their vitality to the point of making

them impossible operative risks have been given the opportunity of the benefits of surgery solely by a preliminary transfusion. As a matter of fact operations have been performed while transfusion has been going on.

For the average transfusion 500 to 750 c.c. is used. A knowledge of the physiology of the circulation and an ability rightly to take stock of and sum up the patient's circulatory status is essential in deciding how much blood to transfuse. Considerable damage can be done by overloading a weakened circulatory apparatus and in many cases, especially those of deficient coagulability of the blood, several small transfusions are more efficacious than a single massive one. The patient must always be watched during transfusions for the respiratory, cardiac and vascular signs of embarrassed circulation and the introduction of the blood slowed down or stopped, as the case may be. It is said that with a transfusion of less than 800 c.c. there is practically no temperature or any other untoward reaction on the part of a patient. Where larger amounts have been given ill-advisedly, such reactions have been noticed. Hemoglobinuria in cases where the preliminary tests have been negative for agglutination and hemolysis should not occur, but it might be expected if the transfusion was a too massive one.

The question is often asked, "What of the donors?" In large medical centers a definite class of professional donors has developed. They have been chosen because of their general health, negative Wassermann tests and willingness to contribute blood for a consideration. Those who have served in several transfusions have every appearance of ruddy health and claim to have been benefited by the experience. This is readily explained when the fact that moderate hemorrhage as one of the strongest stimulants of blood formation, is recognized. A fact that was made use of, if not understood, in the old blood-letting days. In New York, since the introduction of the syringe-cannula methods, these donors will not serve for the transfusion expert who "cuts down" on the vessels.

A possible danger lies in using a donor who has or has had tuberculosis, from the fact that the loss of even a moderate amount of blood may lower his vitality sufficiently to allow the process to gain headway.

Transfusion under modern aseptic technic, improved appliances and a knowledge of serological reactions has come to be a safe, almost routine measure in definite classes of cases in many

clinics. While in general the procedure is a simple one, it is still surrounded by many possibilities of "slips" in technic that are attended with serious consequences and it should be approached with considerable care by one not entirely familiar with the many aspects of the subject.

AN ABDOMINAL TUMOR OF UNUSUAL SIZE— REPORT OF A CASE

BY WILLIAM E. LOWER, M. D., F. A. C. S.,

CLEVELAND

The comparative rarity, in thickly inhabited communities, of tumors of enormous growth prompts me to report the following case in which the tumor weighed more than the patient.

The patient was a widow, aged 62 years, who had been married twice and was the mother of ten children, eight of whom were living. I was first called to see her in consultation with Dr. C. H. Merz, of Sandusky, in September, 1911. For several months a considerable enlargement of the abdomen had been noticed, the mass having increased in size rapidly during the last few weeks before this consultation. The massive growth was then diagnosed as an ovarian cyst and its removal was advised.

A median incision exposed the tumor to which the omentum was attached. The introduction of a trocar did not disclose the character of the contents of the tumor, but when delivery was attempted, the growth was ruptured and was found to be filled with a very thick gelatinous material. The mass weighed nearly fifty pounds.

In December, 1916, I was again called by Dr. Merz to see this patient. At this time her abdomen was so large that she was not able to walk or lie down, but spent all her time sitting upright in a large armchair. The circumference of her body at the umbilicus was seventy inches, and her enormously distended abdomen rested on her thighs, the weight not only causing edema of the legs, but also atrophy of the muscles directly beneath it. (See cut I.)

As it was impossible to put the patient on the operating table, an attempt was made to drain the contents of this tumor with the patient in a sitting posture. Under local anesthesia with novocaine,

an incision was made above the umbilicus, and a large rubber tube was inserted. Through this the dark coffee-colored fluid contents of the tumor were drained. When the tumor contents had reached the level of the incision, another opening was made below the umbilicus through which we removed a much thicker substance of tough,



CUT I

Enormous abdominal tumor: Front and lateral view of patient in December, 1916.

sticky, mucilaginous consistency. When 135 pounds had been evacuated the patient began to feel faint and had some dyspnea and it was thought advisable not to proceed further at this time, although a large amount of fluid remained.

A few days after this operation, the patient was able to walk around and could lie down and rest comfortably. A month later, in January, 1917, we were able to place her on the operating table and to employ ether as well as novocaine. A small incision was made in the median line below the umbilicus through which 45 pounds of dark-colored gelatinous fluid were drawn off. At this time we discovered that the cause of the trouble was a papilloma, which had arisen in the right ovary and had become engrafted on the parietal peritoneum of the entire lower abdomen. Some larger masses were so adherent to the abdominal wall that a large elliptical excision was

made (see cut II), which disclosed still another large papillomatous mass attached to the right pelvic wall. As it was impossible to remove all these growths, only those which formed well-defined tumors on the anterior wall were excised. At the close of the operation,



CUT II

Enormous abdominal tumor: Elliptical portion of abdominal wall removed.

the abdomen was quite flat. The woman made a splendid recovery, is now fairly normal, and has resumed her household duties.

The weight of this patient before the development of the last tumor was 108 pounds; the tumor contents weighed 180 pounds.

THE RELATION OF SYPHILIS TO MENTAL DISEASE

BY ARTHUR G. HYDE, M. D.,

SUPERINTENDENT CLEVELAND STATE HOSPITAL

Of the various causes operating to produce mental trouble, syphilis is one of the most important, as shown by the fact that one-fifth of all cases of insanity can be attributed to this disease alone.

Syphilis is not a disease of recent origin, nor even of recent recognition. Over 200 years before the Christian era the Chinese

emperor, Hoang-ty, caused a collection to be made of Chinese documents bearing on medical subjects, and in the translation of that series we find descriptions which establish without much question the fact that syphilis existed among the Chinese at that time.

Syphilis has been comparatively slow in yielding its secrets to the modern investigator, and it is only within recent years that the causative organism has been known. Schaudinn reported the finding of the germ in 1905, and two years later Wassermann perfected a test by which we can recognize the presence of syphilis in an individual, whether or not there are outward signs or symptoms. These two discoveries have led to the accumulation of many important facts concerning the disease. It is not necessary to go into any further detail regarding the history of syphilis, the discovery of the germ, and the value of the Wassermann reaction, as they are well-known to all of you and have been told and retold many times.

When we come to consider the types of insanity directly caused by syphilis, we find that there are three fairly distinct classes: 1, general paresis; 2, cerebrospinal syphilis; 3, syphilitic endarteritis of the cerebral vessels. Of these types, general paresis or general paralysis of the insane is the one of which we wish to speak at some length. The records of the Cleveland State Hospital for the last three years show that 15 per cent of our admissions are suffering with paresis, which is undoubtedly one of the most dreadful of all diseases, and is incurable, especially at the time they are admitted to our state hospitals, by any means known to the medical profession at the present time.

The object of this paper is to bring this not uncommon or infrequent disease to your attention and plead for an early diagnosis and energetic treatment, and better still for more scientific examinations and treatment in all cases of syphilis. By so doing this disease will be reduced very markedly. In no other department of his humanitarian activities has the family physician a more exacting demand on his resources than in his dealings with cases of mental trouble.

General paresis is now considered as a direct result of syphilitic infection. On looking back over the history of general paresis, we find that there has been some controversy as to whether or not all cases could be considered as due to syphilis. The reason for this discussion lies in the fact that changes found in the brain are of a

little different type than those produced by other stages of the disease, and that the symptoms of this disease do not, as a rule, develop until ten to fifteen years after the infection, and that generally this period is free from other obvious symptoms of the disease.

The Wassermann reaction is positive in the blood of cases of general paresis, however, in from 95 to 100 per cent of the cases, and not only this, but it is also found positive in an equally great percentage of cases in the cerebrospinal fluid. Conclusive evidence was forthcoming in 1913, by the work of Moore and Noguchi, who were able to demonstrate the *treponema pallidum*—the causative organism of syphilis—in stained microscopic preparations of the brains of general paralysis cases in 24 per cent of their series. This observation has been substantiated by others, and while it has not proved possible as yet to find the germ in every case, yet when we consider the technical difficulties to overcome, I think we cannot help but accept the conclusion that it must be considered as simply another form of expression of syphilis.

While there are few, if any, disease entities more clearly defined than well-developed paresis, there are also few diseases, mental or physical, which can create more social havoc before being recognized. This is due to several causes: the victim may have lived a happy, successful life and may be just reaching the top of the ladder, preparing to pluck the fruits of his industry when the calamity comes. Too often before the disease is recognized, he has dissipated the family fortune, suffered social disgrace, and ruined his business. His relatives have him sent to a state hospital, only to find that they have delayed too long, and their means of sustenance is gone. In just such cases does the general practitioner find his field. The members of his family inquire, and with some show of right, why they were not warned in time. This is the question the family physician has to answer, and it is one whose necessity he can, as a rule, prevent. It would be well to remember that any mental disorder beginning between the ages of thirty and fifty may be paresis. Of course this is only a generality for diagnostic convenience, and as such has its limitations, but it is well to keep in mind.

Rarely do the relatives, friends or business associates realize in the case of the early paretic that a serious mental disturbance is in progress. Those closest to the patient, his family, seeing him

as they do daily, fail to recognize the stealthy approach of the disease. They adapt themselves to his altered moods and see him become a mental wreck. No such occurrence should veil the sight of the physician. No satisfaction can be found in the plea sometimes made by the general practitioner that he does not specialize in mental diseases. General paresis is, first of all, a physical disease, and the physical signs, as a rule, antedate the mental ones.

Of the early physical signs we mention the Argyll-Robertson pupil—that is, the loss of pupillary reaction to light, with the retention of the reaction to accommodation. This sign will be found early in at least one-third of all cases. Inequalities of the pupils are found very early in about 80 per cent of all cases. Almost as frequently will be found irregularities of the pupils. More obvious even than the pupillary disturbances, and among the earliest signs of all, are the speech defects, which occur in 60 to 75 per cent of all cases. This important symptom has the advantage of being easily detected. We are also very apt to get a history of paralytic seizures, even in the early stages of the disease. As to the neurological examination, several signs are demonstrable early in the disease, and can be elicited without any trouble. The knee jerk is usually increased, although it may be diminished or absent. A striking symptom often found is the inability to stand erect with the eyes closed, Romberg's sign. Another test easy to apply is that of skin sensation. If the attention be distracted, a pin may be stuck in the skin without his being aware of it.

The above are only a few of the physical signs of this disease, but taken with the mental signs present, will make the diagnosis very probable. When we come to the consideration of the diagnosis of early paresis by the mental symptoms, it is difficult to be concise. One idea which is held quite universally is that the paretic is, of necessity, exalted and grandiose. While these ideas are frequently found, they do not appear as a rule until late in the disease. The incipient paretic may make an excellent impression. Speaking generally, we may say that paresis must be excluded from all mental diseases, especially those of middle life and beyond. It may simulate clinically any other mental disorder for a time at least. The sudden appearance of recklessness, extravagance, dissipation, slovenliness, or other unusual symptoms in a person of former good habits, is always suspicious. The neat dresser becomes careless as to his appearance, the temperate man comes home

intoxicated, the pillar of the church chooses company from the underworld, etc. Even in the very early stages an intellectual weakness is demonstrable, his memory is impaired, especially for lately acquired facts. The most striking feature of the case is the patient's usual emotional attitude toward the situation. He is well pleased with himself, there is nothing the matter with him, never felt better in his life, only came to see the doctor to please his wife, etc. This characteristic may be illustrated by the fact that after examining a paretic he may start to leave your office overwhelming you with professions of gratitude, although you have told him nothing at all about his condition, nor have you offered him any prescription.

The essential characteristic of general paresis is a progressive dementia or enfeeblement of the mental powers. The various bizarre delusions and conduct disorder are but shifting superstructures erected upon this, while he sinks lower and lower in the intellectual scale, he compensates himself for his actual poverty of ideas by fantastic tales of the untold wealth and miraculous power of which he is the possessor. These latter belong to the classical picture of a well-developed case of general paresis. The general practitioner meets those cases whose symptoms are not so pronounced but just as essential, such as slight memory defects, inability to fix the attention, mild euphoria, mistakes in calculating, eccentricities of conduct, slovenliness of habits, etc. Any or several of these symptoms, especially in a middle-aged person, and most especially in a syphilitic, should be the signal for a thorough physical examination. In many cases, however, a tentative diagnosis, amounting almost to a certainty, can be made if the physician will run over a few cardinal symptoms carefully. I will suggest a few of the most striking and easily elicited signs: The physical examination, especially the neurological part of it, is of the utmost importance. The patient should be examined for eye symptoms, speech defect, disturbances of knee jerk, Romberg's sign, tremors, and diminished sensibility to pain. In examining the eyes, the reaction to light and accommodation should be tested, consensual and sympathetic reflexes are examined, and the two pupils observed and compared for irregularities. In paresis, the loss of the consensual and sympathetic reflexes often occurs before the Argyll-Robertson pupil. Irregularities of the pupils are of more importance than inequalities, and the Argyll-Robertson pupil the most important sign of all. Kraepelin does not believe that this occurs without syphilis. The knee jerks are usually increased in extent but their absence is of more

diagnostic importance. The patient sways with closed eyes and shows tremors of the closed eyelids, protruded tongue, and extended fingers. The tremor of the tongue is a coarse anteroposterior vibration, to which condition the name "trombone tongue" has been given. The loss of pain sensation is also frequently observed.

The earliest mental defects to appear in paresis are those of memory, and these are often not apparent in an ordinary conversation. The physician must not be misled by the patient's readiness with dates, for he frequently supplies something plausible when the correct one escapes him. He should be asked to give a synopsis of his life and a complete account of events during the last few months. If then the physician takes notes of his account and asks him a short time later, many discrepancies will be found even in dates or periods of time synchronizing with important events of his life. His powers of attention and retention are as a rule limited. His calculations, even in the multiplication table, will be found to be pathological. If an inquiry be made into his plans for the future, his judgment will be found to be defective. He may be contemplating absurd purchases, hazardous business experiments, and wildest investments of all kinds. Any failure to measure up to normal in the mental examination, particularly in a subject who holds a good social position, is suspicious; if this is combined with any of the physical signs, the diagnosis is rendered extremely probable.

In all doubtful cases where paresis is suspected, examination of the blood serum and spinal fluid should be made. These examinations should always be made by the best pathologists in the city. The physician should bear in mind that every incipient case of paresis he diagnoses and causes to be committed he performs a service to society in general and to the patient's family in particular.

Cerebrospinal syphilis, the second type of mental disease, is numerically of less importance. In it the disease attacks localized areas of the coverings of the brain or the supportive tissues surrounding the blood vessels, and often gives more symptoms of a physical than a mental type, such as paralysis of special muscle groups, blindness, deafness, etc.

Cerebral syphilitic endarteritis is an inflammation of the lining of the blood vessels carrying blood to the brain, resulting in par-

tial or complete blocking of their channels and consequently partial or complete starvation of the parts of the brain affected.

Aside from these three types of insanity caused by syphilis, there are probably many other diseases, both of physical and mental nature, which are caused by or influenced for the worse by syphilis, of which we are gradually gaining evidence, but which cannot yet be definitely outlined. We know that a great variety of physical deformities and some mental defects can be directly traced to hereditary syphilis, and it is possible that other types of imbecility and feeble-mindedness may be dependent on this condition, either directly or by reason of its general effect on the body during the developmental period, and that in the acquired form also it may play a greater role than we yet realize as a contributing factor in persons predisposed to mental disease.

As in other diseases, two lines of combating the evil lie open to us—treatment and prevention. As to the treatment of syphilis we only wish to say that marked progress has been made in the last few years. There is no question that salvarsan has been of great benefit to mankind, and that much suffering has been relieved by its use, and the number of days required in the treatment of syphilis greatly reduced. As stated previously, an early diagnosis and continued energetic treatment at its onset cannot be made too emphatic.

Our experience at the Cleveland State Hospital in the treatment of paresis has been rather discouraging to date. In a few cases some benefit seems apparent, but it is too early to draw any conclusions. However, we feel that in such a disease as this, no time or scientific treatment should be denied, and will continue the same, hoping in time to have our labors rewarded.

As to prevention, one only needs to follow the regular course of a case of paresis to be thoroughly convinced that the effects of syphilis are so appalling and its cure so difficult that every effort should be made to protect the public from its ravages. Prevention must include education, and to be effective it would seem that the cloak of obscurity wrapped about syphilis by the lay press and in public discussion must be lifted, and the disease recognized and discussed under its own name, and with a freedom heretofore avoided. Is not the fact that it causes twenty per cent of all cases of insanity, to say nothing of many physical conditions, sufficient warrant to set aside false modesty and face the problem openly?

It should be made a notifiable disease, so that its exact prevalence may be ascertained. All hospitals receiving aid from a state or city should be made to receive and care for such cases, and no person having this disease should be permitted to marry or engage in any occupation in which he may convey the disease to others.

Full information should be given the public by means of lectures, pamphlets, and health bulletins regarding the dangers of syphilis. The suppression of syphilis is of the most vital importance, and if the people were aware of its nature they would insist upon the enforcement of proper precautions to accomplish this purpose.

THE INFLUENCE OF THE FORCE OF GRAVITY UPON THE CIRCULATION*

BY R. J. SCHRAFF,

CLEVELAND

Curiously enough, this question of very obvious importance was for a long time either overlooked or neglected by physiologists. It remained for Leonard Hill to arrange the scattered facts which were known at the time, and by research effort of his own to uncover very serviceable and enlightening evidence upon which to base satisfactory explanations of clinical phenomena, which until then were accepted merely as effects of gravity, the specific causes being more or less slighted. Observations recorded previous to the publication in 1895 and 1897 of Hill's findings, established little other than the proven fact that the feet-down position lowered arterial blood-pressure, and that the feet-up position raised it. Since then much has been written, but the classic on this subject is none other than the work of Hill above mentioned. It is the purpose of this paper, not to exploit new evidence but to furnish a brief resumé of the most striking facts, together with a concluding comment upon their clinical significance.

From a physical standpoint the hydrostatic pressure exerted by long columns of blood within the vessels is perfectly natural. Hence in a long-bodied animal, such as man, there is obviously an hydro-

*Read as part of a symposium before the sophomore class at Western Reserve Medical School.

static factor of some moment with which to reckon. This factor is necessarily a variable quantity, depending upon the position of the body. That, in the absence of any compensating agency, the force of gravity would bring the circulation to a standstill, is a concept of benign simplicity. The very existence of a circulation supposes at least one competent influence serving to meet and balance the hydrostatic pressure of the blood. As a matter of fact there are several such influences concerned, to which attention will now be directed. The results to be herein recounted were obtained by experimentors who carried out their research upon such animals as rabbits, cats, dogs and monkeys.

In the four-footed animals placed in the feet-down position the carotid blood-pressure always falls, in the feet-up position always rises. The magnitude of this rise or fall depends in great measure upon the length of the body, for it is found that these effects are the more marked when long-bodied animals are observed. The very alteration of carotid blood-pressure following alteration in position, emphasizes the prime importance of gravity's influence upon the circulation. Salathé studied the effect of gravity on hutch-rabbits and found that in the vertical feet-down position, the animals died in the convulsions of acute cerebral anemia, in the course of fifteen minutes to two hours. In wild rabbits, as well as in cats and dogs, this result is not easily obtained, indicating that they possess some mechanism which counteracts and compensates, either wholly or in part, the hydrostatic pressure exerted by gravity.

In animals to which the upright position is normal, as in the case of the monkey and also man, the influence of change of posture is almost completely compensated. Occasion will be found to refer again to these facts.

As before noted, the carotid blood-pressure of an animal placed in the feet-down position shows a marked fall. That this fall is due to the accumulation of blood in the splanchnic veins, and a subsequent decrease of flow into the heart, is well shown by Hill. The rise in carotid pressure in the feet-up position is attributed by the same authority to a plethora resulting from undue emptying of the abdominal veins. It might not be amiss here to recall that the great capacity of the vascular area of the abdomen renders the effect of hydrostatic pressure in the lower limbs a matter of slight significance. In experimenting upon normal animals, the fall or rise in pressure attendant upon postural change will reach a point

beyond which it is difficult to drive it. In other words, there is some mechanism which acts to prevent the influence of posture from assuming grave proportions. This is the vaso-motor apparatus acting upon the splanchnic vessels in such a way as to prevent excessive accumulation of blood in that area. Hill has demonstrated this by a series of experiments, the substance of which is herein reproduced. Experimenting upon a dog it was found that the variation in pressure in the splenic vein, between the horizontal and vertical feet-down positions, amounted to over 100 mm. MgSO_4 sol., whereas the pressure in the splenic artery remained practically constant. The result on the arterial side should have been a fall, but the compensatory constriction of the arterioles of the splanchnic area prevented any noticeable decline. The large rise of pressure in the splenic vein was consequent upon the determination of blood to the veins of the splanchnic area, when the animal was rotated to the feet-down position.

Chloroform anesthesia was found to have a tendency to disable the mechanism of compensation by paralyzing the vaso-motor apparatus, and in the feet-down position of the blood would gradually collect and stagnate in the splanchnic veins; the heart, becoming empty, would cease to beat. Application of pressure to the abdominal wall, either by hand or by the use of a bandage, readily compensated for the fall of pressure in the feet-down position. This is attributable to the compression thereby exerted upon the splanchnic veins, thus preventing the blood from accumulating there. Injury to the spinal cord, severe operations, asphyxia, curare poisoning—all tend to damage compensation by paralyzing the splanchnic vaso-constrictors. In these cases the influence of gravity becomes a very serious consideration.

Hill found that, having divided the left splanchnic nerve, placing the animal in the feet-down position and stimulating the peripheral end of the severed nerve, the pressure rose very appreciably. Cutting of the splanchnic removes its constrictor influence; the veins dilate and the pressure falls. Stimulation of the peripheral end re-establishes this tone and the blood-pressure rises; this occurs even in the feet-down position and against the force of gravity. The splanchnics are predominantly vaso-constrictor veins; compensation is due to increased peripheral resistance and this is in turn due to the activity of the splanchnics. According to Hill and Barnard, the splanchnic vaso-motor mechanism is in itself amply sufficient to compensate for the hydrostatic effect of gravity.

Sewall, in a recent paper, called especial attention to the tone of the abdominal muscles as a factor of compensation. It is, of course, obvious that when the mechanical support of the splanchnic vessels is withdrawn, a marked fall in blood-pressure ensues. This accounts, in the main, for the results which Salathé obtained in his experiments on rabbits which had been long confined and in which the "tonus" of the belly wall had been largely lost. In wild rabbits, as well as in cats and dogs, the tone of the abdominal muscles precludes an alarming fall in blood pressure when in the feet-down position. It was previously mentioned that in normal men the hydrostatic effect of gravity is almost completely compensated. It is to be noted, however, that anything which weakens the splanchnic vaso-motor mechanism or the contractile tone of the abdominal wall eliminates the compensation and allows gravity to exert an influence, which is effectual only in proportion to the degree of compensatory weakness.

These postural changes in carotid blood-pressure are of cardinal importance in the determination of the blood-pressure and circulation in the brain. The rigidity of the intact skull precludes any change in the brain volume. The vessels are never empty, but in feet-down animals the blood may stagnate. When in the feet-down position a trephine hole is made in the skull, the brain immediately collapses, becomes drained of blood, and death speedily ensues. Hill, in his experiments on a man who had been trephined, noted that the normal intra-cranial pressure was negative while the man sat upright, but that it became positive as soon as the head was bent down towards the knees or on any expiratory effort. He verified his results on dogs. Whenever, then, the cerebral capillary pressure falls below that of a column of blood from the heart to the brain, the brain will collapse. It is easy to see that when a patient who has a trephined hole covered only by the scalp assumes an upright position, the influence of atmospheric pressure will push the scalp in and the cerebral capillary pressure will be lowered. When the patient also has an incompetent vaso-motor mechanism, the upright position is exceedingly dangerous.

Until now, in this paper, the respiratory pump as a compensatory factor has been slighted. I shall enumerate Hill's findings on this subject as briefly as possible. The respiratory pump forms, as it were, a second line of defense. In itself it is capable of maintaining the circulation when the splanchnic vaso-motor tone is de-

stroyed; this is effected "by expiratory compressions of the abdomen, occurring simultaneously with inspiratory thoracic suction. By these means the outflow through the splanchnic capillaries is diminished and the input maintained into the right heart from the veins." The compensatory mechanisms are, to the best of human knowledge, excited directly to action by the sudden fall of arterial pressure which occurs when an animal is rotated to the feet-down position. The sensitivity of bulbar centres to changes in circulation through the bulb has been abundantly shown. We have already dealt with the clinical significance of gravity in cases of trephining when associated with weakened compensatory factors. Let us now take up a few other points suggested by the preceding.

The former view of syncope which was quite commonly held and summarized in Quain's Dict. of Med., 1894—as follows: "Syncope consists essentially in sudden failure of the action of the heart," is now for the most part discarded. The only nerve which could produce such an effect is the vagus, and we have not the slightest ground for attributing this action to that nerve. Moreover, a rapid though very feeble pulsation is demonstrable in nearly all instances. The symptoms shown by an animal in the feet-down position, with compensatory powers destroyed by the production of vaso-motor paralysis, are the symptoms of syncope. In both cases the head-down position restores the animal to normal, and it is therefore reasonable to believe that ordinary emotional syncope is the result of sudden and temporary inhibition of the vaso-motor center, caused by some painful and powerful sensory stimulation.

Many and various have been the theories advanced to elucidate the etiology of surgical shock. None impresses us more than the explanation offered by Yandell Henderson, who holds that shock, toxemic as well as surgical, depends upon the accumulation of blood within the large abdominal veins. Henderson attributes the tone of these veins not to vaso-motor nerves, but to an intrinsic veno-pressor mechanism, the efficiency of which is dependant upon the tension of CO_2 and the hydrogen-ion concentration of the body fluids. Assuming this to be so, it is clear that when metabolism has been interfered with, in one way or another, the veno-pressor mechanism so affected, will cause a venous dilatation, and when the erect posture is assumed the blood will stagnate in the "belly reservoir." Hence, we have the expression "to bleed to death in one's own vessels." An interesting observation has

been made by Janeway, who claims that many of the familiar catastrophes known as "heart failure" are nothing more or less than postural drainage of the blood into the splanchnic vessels.

Hill suggests elevation or bandaging of the abdomen to relieve the splanchnic vaso-motor paralysis, which has been shown to play the chief role in the deleterious effects of postural change in the weakened patient. In this he is supported by the consensus of opinion and the bulk of evidence, most authorities agreeing that artificial support applied over the lower abdomen is one of the most effectual means of relieving the morbid symptoms of splanchnic stasis.

References:

Hill: *Jour. of Phys.*, 1895: XVII: 15.

Hill & Barnard: *Jour. of Phys.*, 1897, XXI.

Sewall: *Am. Jour. of Med. Sciences*, 1916: CLI: 491.

American Orthopedic Association, Preliminary Program.—Thirty-first annual meeting, Pittsburgh, May 31, June 1, 2, 1917. Headquarters at the William Penn Hotel.

PROGRAM

THURSDAY, MAY 31

Morning Session, 9:00 A. M.

1. President's Address. Dr. David Silver.
2. Poliomyelitis: Treatment of the Convalescent Stage. Dr. R. W. Lovett.

Prepared discussion by Dr. R. T. Taylor, Dr. Walter Truslow, Dr. A. H. Cilley, Dr. Armitage Whitman (by invitation).

3. The Uses of Sterilized Dead Bone Grafts. Dr. W. E. Gallie.
4. The End Results of Arthrodeses.
 - (a) Of the Hip. Dr. E. G. Brackett.
 - (b) Of the Ankle and Foot. Dr. R. E. Soule.
 - (c) Of the Shoulder. Dr. C. H. Bucholz.

12:00 Noon

First executive session.

Afternoon Session, 2:30 P. M.

1. Symposium on Arthroplasty.
 - (a) Methods, Clinical and Experimental. Dr. Nathaniel Allison and Dr. Barney Brooks.
 - (b) After What Affections and in What Locations are Attempts at Arthroplasty Justifiable? Dr. W. S. Baer.
 - (c) What are the Real Results of Arthroplasty? Dr. M. S. Henderson.
2. Candidate's theses.

Thursday Evening

Smoker.

Informal Discussion of Orthopedic War Surgery.

Discussion of report to be made by Committee on Orthopedic Preparedness. Dr. J. E. Goldthwait, chairman.

FRIDAY, JUNE 1

Morning Session, 9:00 A. M.

1. What is the Role of the Sun's Rays in the Treatment by Heliotherapy? Dr. A. H. Freiberg.
2. Results of the Operative Treatment of Muscular Contractions Due to Obstetrical Paralysis. Dr. J. W. Sever.
3. Surgery of the Musculo-Spiral Nerve. Dr. S. L. McCurdy.
4. Myogenetic and Neurogenetic Contraction of the Hand and Wrist, especially Volkmann's Contracture. Dr. Arthur Steindler.
5. Bone and Joint Infections Treated by the Carrell Technique (moving pictures). Dr. G. W. Hawley.
6. Candidates' Theses.

Afternoon Session, 2:00 P. M.

1. Report on a Survey of the Cripples in the City of Cleveland. Dr. W. G. Stern.
2. Relation of Social Service to Orthopedic Hospital Clinics. Miss Ida M. Cannon, chief of Social Service, Massachusetts General Service.
3. Remarks on the Etiology of Flattening of the Upper Femoral Epiphysis. Dr. A. T. Legg.
4. The Usefulness of the Patella in Securing Fixation and Promoting Early Bony Union After Excision of the Knee. Dr. H. P. H. Galloway.
5. A New Stabilizing Operation for the Foot in Infantile Paralysis. Dr. F. E. Peckham.
6. Diagnosis and Treatment of Hip Joint Disease. Dr. J. K. Young.

Friday Evening

Annual dinner.

SATURDAY, JUNE 2

Morning Session, 9:00 A. M.

Symposium on Low Back Pain.

1. Anatomical Paper Seeking to Explain Localized Pain and Referred Nerve Symptoms. Dr. G. G. Davis.
2. Neurological Paper Dealing with Cord and Nerve Affections Causing Low Back Pain. Dr. C. H. Henniger.
3. Gynecological Paper Dealing with Gynecological Causes of Low Back Pain. Dr. W. P. Graves.
4. Genito-Urinary Paper Dealing with Genito-Urinary Causes of Low Back Pain. Dr. Hugh Young.
5. Slight Bony Displacements as Causes of Low Back Pain. Dr. F. J. Fassett.
6. Differential Diagnosis and Orthopedic Causes for Low Back Pain. Dr. A. R. Colvin.

12:00 Noon

Final executive session.

The Cleveland Medical Journal

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 } THE CLEVELAND JOURNAL OF MEDICINE

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EDITORIALS

MEDICAL "PREPAREDNESS"

The members of the medical profession have been variously charged with ultra-conservatism, disinclination to accept new ideas or methods and an extreme concentration in their own professional activities to the exclusion of other interests and duties as citizens. Such criticisms may or may not be justified facts, but even if ap-

pearances have been substituted for facts it is not proposed to argue these points. The medical profession of the United States is undoubtedly to be given, in the very near future, an opportunity of demonstrating beyond the peradventure of a doubt, that when the call does come it is willing and able to give freely of everything it possesses of knowledge, skill and training, and to make innumerable and heavy sacrifices for the public weal. Already in the European countries this has been more than amply demonstrated by our professional brothers.

The whole country for years has been basking in a comfortable sense of isolation and remoteness from the chance of war and a criticism that physicians have shown an apathy or actual indifference to the question of medical preparedness in this country during the past three years is swallowed up in the fact that a similar state has existed in all other professions and callings except in the army and navy.

The problem of how this change from a state of peace and security to one of national crisis is to be met is deserving of the attention of every medical man. It is perhaps but little realized how few of the duties peculiar to a military surgeon are of a distinctly professional nature and yet these duties are best performed by men having had medical training. The amount of specialized knowledge and training and the time required to transform a most skilled civil practitioner into an efficient military surgeon is very great. The effects of having the untrained practitioner called suddenly into military capacities were pathetically illustrated in 1898. Outside of base hospitals and in capacities where professional skill determines the assignment of certain individual physicians the duties of the surgeon are about three-quarters military to one-quarter professional.

On the present authorized ratio of seven medical officers to each one thousand troops every trained military surgeon in the army, the national guard and the medical reserve corps, and an additional two thousand new and untrained doctors would be called out in the event that an army of 500,000 was raised. If an army of one million was authorized, thirty-two thousand men requiring two hundred and twenty-four medical officers would have to be raised in the Cleveland district.

It is hoped that the questionnaire that has been sent out by the Academy of Medicine, working in conjunction with the Auxiliary Medical Defense Committee of Cuyahoga County, will enable the

physicians of the country to meet this problem most efficiently and so prevent unnecessary burdens and sacrifice from falling upon the few.

That even the young "unencumbered" practitioner who accepts service does so at no small personal sacrifice goes without saying and the numbers of responses to the questionnaire by men undoubtedly "encumbered" expressing a willingness or desire to serve is a decided refutation of any charge of apathy or indifference. From the eleven hundred and fifty-three letters and blanks sent out replies have already been received from about two hundred according to the committee and it is earnestly to be hoped that every doctor in Cuyahoga County will eventually respond.

The following letter appearing in a recent issue of the *Journal of the American Medical Association* is worthy of re-reading, serious consideration, and action by the local profession. It applies equally to the members of the profession who, though not at present of the Medical Reserve Corps, do volunteer and serve when the call comes.

*"To the Editor:—*Should the country ever be engaged in war, the medical department of the army, in calling reserve officers to the colors, wishes to cause as little hardship and sacrifice to the reserve medical officers as may be consistent with the needs of the country. With this end in view, the department desires that you bring to the attention of the profession at large the necessity of the city, county and state medical societies organizing for the purpose of taking care of the practices of the officers of the reserve who respond to a call for service. In England this plan has proved of great benefit. The idea of the department is that the profession should organize on a similar basis.

For example, should Dr. Jones be called to the colors, the local society, through its members, would take care of his practice during his absence. On his relief from active duty, his practice would be returned to him intact. Such a plan will cause no unnecessary hardship on the officer responding to a call for service, while the absence of such a plan would penalize the officer who gives his service to the country in a crisis. The department appeals to the patriotism of the profession to protect the interest of those of the profession who may be called to duty in war.

ROBERT E. NOBLE, M. D., Washington, D. C.

(For the Surgeon General.)

Major, Medical Corps, U. S. Army."

Attention is called to a communication from the Council of National Defense published on page 215 of this issue of the *Journal*, which indicates the nature and relations of the organization for Medical Preparedness, and the functions of the local committee known as the Auxiliary Medical Defense Committee of Cuyahoga County. It is obvious that all local medical effort and activities may be co-ordinated to the best advantage by co-operation with the local committee.

MEDICAL PUBLICITY

In no other field of human knowledge is the individual so intimately interested and concerned as in the field of medicine. Incidentally there are few fields, outside his own specialty and vocation, concerning which he feels he knows so much and really knows so little. Nor is this knowledge, or rather lack of it, entirely his own fault.

Early medicine, like the Delphic oracle, surrounded itself with a cloak of mystery and spoke in riddles. The medicine man of the American Indians, like his prototype in Europe, resorted to spells and incantations. And this spirit of mystery and aloofness at the hands of the average practitioner characterizes much of our medicine at the present time. Fortunately this attitude is being gradually succeeded by one of frankness and rationalism; the medical man is taking his lay brother into his confidence and is showing him that there are no tricks, there is no mystery, the game is being played fairly, the cards are on the table and he has none up either sleeve.

The ignorance of the laity is due largely to lack of opportunity for the acquisition of definite knowledge. For the average reader the daily newspaper, and to a markedly less degree the magazine or periodical, is the medium through which his knowledge, outside of his own special field, is largely acquired. Fortunately, in many of the magazines there now appear from time to time articles containing medical knowledge of definite value and written in a more or less popular style, so that they may appeal to and be understood by those who have no medical training. In this connection we would call especial attention to the very valuable articles appearing almost weekly in the columns of the *Youth's Companion*. Such articles might well be emulated by other periodicals.

But when we turn to the daily press what a mass of information, or better misinformation, in regard to things medical confronts us. Certainly if the accuracy of the medical news might be taken as an index of the news in other lines we would have only to read what was printed and then hasten to believe the direct opposite as true.

Tissues from the lower animals are transplanted at will into human beings where they complacently perform every function ex-

pected of them while the erstwhile human derelict, like the hero of the story, lives happily forever after. Such statements to the medical mind are too ludicrous to excite even comment. By others unfortunately they are too often accepted as true. "They must be true; otherwise how could one print it?"

Misstatement and inaccuracy are true, not only of the news columns, but of the advertising section as well. Year in and year out our lost manhood advertisements continue to exact their toll of human suffering from the gullible youth and too often in addition to filch money from his pocket.

Isn't it time for the medical profession to launch a definite campaign of education in the columns of the daily press? Would not money spent for such a purpose bring back returns a thousand fold, not in dollars and cents, but in the satisfaction of practicing medicine upon a semi-intelligent public?

For the Prevention of Blindness in Ohio.—Out of a total of 1,327 cases of inflammation of the eyes of the new-born reported to the State Department of Health from August 20, 1915, to November 1, 1916, more than 1,000 cases were covered by the local public health nursing services in the State. The others called for special attention, which was supplied by the State Department. Thirty-five cases of impairment or probable impairment were reported out of 1,141 receiving attention in the first year of this service.

The following table presents the condition at a glance:

Total loss of vision, both eyes.....	2
Probable total loss of vision, both eyes.....	1
Total loss of vision, one eye with partial loss of other eye....	7
Total loss of vision, one eye.....	13
Partial loss of vision, both eyes.....	1
Probable partial loss of vision, both eyes.....	1
Partial loss of vision, one eye.....	5
Probable partial loss of vision, one eye.....	5
<hr/>	
Total cases impairment or probable impairment.....	35

Such a record shows the value of follow-up work.

A recent factor in prevention of blindness work in Cleveland is the awakened interest noticed among the fathers of all nationalities and their recognition of the proper course to pursue in cases of severe ophthalmia. One case of specific ophthalmia was of especial interest, as its final saving of sight necessitated the combined efforts and co-operation of three nurses, Commissioner of Health, Chief of Police and two ophthalmologists. The appreciative acknowledgment of both parents was finally won.

ABSTRACTS

ABSTRACTS OF MEDICINE

The Status of Diptheroids with Special Reference to Hodgkin's Disease. W. F. Cunningham, *Am. J. M. Sc.*, 1917: CLIII: 406.

This article is of interest on account of the attention which has been given to recent work, particularly that of Bunting and Yeats, describing the presence of gram-positive, non-acid-fast, pleomorphic organisms in the glands from cases of Hodgkin's disease. The author attempted to corroborate this work. He obtained glands and prepared cultures with ordinary technic and also with strict aseptic technic of the operating room. While he found diptheroids in glands where questionable technic was used, as well as in the laboratory, in blood cultures and in heart bloods obtained at the morgue, and not in a series where technic was definitely controlled, he was led to believe that he was dealing with organisms whose natural habitat was the laboratory, though he states that his series of cases is too small to permit a positive statement.

C. L. C.

The Rarity of Conjugal Phthisis. Maurice Fishberg, *Am. J. M. Sc.*, 1917: CLIII: 395.

One hundred and seventy families in whom either husband or wife was known to be definitely tuberculous were studied. The author found that there were only 5 couples (or 2.9 per cent) where both husband and wife were infected, and concludes that the simultaneous or consecutive occurrence of phthisis in husband and wife is extremely rare.

He explains the rarity of marital phthisis on the grounds of an immunity acquired by the majority of adults due to a previous latent lesion, the frequency of which is well recognized.

C. L. C.

The Path of Involvement in Ascending Infection of the Urinary Tract.

D. W. Eisendrath and O. T. Schultz, *J. Med. Research*, 1917: XXXV: 295.

The authors show by experiments on animals that the kidney becomes infected secondarily from the bladder and that the path of travel is many times by way of the lymphatics. They point out that much of the work in infections of the kidney has been directed toward the question of how organisms gain access to the kidney from the blood stream. They note also that in ascending involvement the generally accepted idea is that the infection travels to the renal pelvis either in the urinary stream or in the epithelium; but unless the ureter is obstructed it is difficult to understand how organisms can travel against the secretory current within the ureter.

Female dogs and rabbits were used. Cultures of *Bacillus coli*, *Staphylococcus aureus*, and *Bacillus proteus* were injected directly into the bladder. The animals were killed at varying intervals and cultures immediately made from the hearts' blood, both kidneys and from the bladder. For microscopic study the urinary tract with the surrounding connective tissue was removed en masse. Much emphasis is laid on the value of longitudinal serial sections in following the evidences of infection along the lymphatics of the ureter.

As a result of these experiments the authors conclude that the tissue reaction following the injection of organisms into the bladder may remain limited to the bladder and ureter or the infection may travel to the renal pelvis by way of the lymphatics of the ureter. From the pelvis extension takes place along the intertubular and perivascular lymphatics to the kidney tissue and thence to the perirenal tissue by way of the capsular lymphatics.

The experimental evidence affords a further conclusion that in cases of pyelitis and pyelonephritis in the human, secondary to infection of the bladder, the lymphatics constitute the most important course of upward travel of the infection, especially in those cases where there is no hindrance to the urinary outflow. Finally that pyelitis and pyelonephritis, not secondary to cystitis, may also be the result of lymphatic transport of infection from the pelvic organs in the male and female, and from the lower intestinal tract.

R. W. S.

The Drug-fastness of Spirochetes to Arsenic, Mercurial, and Iodide Compounds in Vitro. Seinai Akatsu and Hideyo Nōguchi, *J. Exper. M.*, 1917: XXV: 349.

In view of the fact that some organisms acquire a tolerance to certain toxic substances, the authors attempt to establish whether *treponema pallidum* develops a tolerance to various anti-syphilitic therapeutic agents *in vitro*. The consensus of opinion of men who have had a large experience with salvarsan is that it must be used in many successive doses in order to obtain the full therapeutic benefit of the drug. This fact has of course been known for many years with regard to the use of mercury.

The question at once presents itself whether or not the repeated injections of these anti-syphilitic drugs tend to produce a certain tolerance on the part of the *treponema pallidum*. It would prove of great practical importance, since the regulation of dosage must necessarily be guided by the changes which occur at the same time in the resistance of the parasites.

The authors used pure cultures of *Treponema pallidum*, *Treponema microdentium* and spirochetes grown on the usual ascites broth-tissue medium. After permitting the organisms to grow for a fortnight in media containing certain quantities of each drug, transfers were made to the next series of tubes containing the same drug in higher concentration, and similar transfers were repeated every two weeks. After three to four months *Treponema pallidum* increased its tolerance to salvarsan and neo-salvarsan five and one-half times. With bichloride of mercury there was an increased tolerance of from 35 to 70 times the original. There was an unmistakable increase of resistance to the action of iodine-iodide solution (Lugol's solution), but it was not nearly so marked as with the other drugs.

R. W. S.

Reduction of the Number of Injections Used for Combined Anti-typhoid and Antiparatyphoid A & B Vaccination. F. Widal and A. T. Salimbeni. *La Presse Medicale*, 1917: XXV: 1.

A series of four injections in antityphoid inoculation was practiced in France at the beginning of the war, but very soon many cases diagnosed as paratyphoid A & B developed. A combined vaccine was then employed. The authors, considering German, English and American practice of fewer injections, proposed a similar in the French Army. Instead of four injections, two injections of double strength vaccine were instituted. The present vaccine contains ten billion organisms to each 3 ccm. Two injections are given—1 cc. and 2 cc. successively—with an interval of a week. If only one injection can be given, the authors recommend the use of 1.5 cc. of the vaccine. Serologically the protection seems to be as great as following the given number of injections. The reactions following these inoculations with a vaccine of greater strength were no greater than those observed formerly.

H. F.

Aleucocythaemic Leukaemia. John T. King, Jr., *John Hopkins Hospital Bulletin*, 1917: XXVIII: 114.

"Aleucocythaemic Leukaemia," first proposed by Waterhouse in 1913, is again suggested as a more satisfactory term for those cases of leukaemia

which show no increase of the total of white blood-cell count. Of the 105 cases of leukaemia observed at Johns Hopkins Hospital, 14 were without an increase in the total white count at some time in the period of observation. Three cases of aleucocythaemic leukaemia are reported in detail—which are classified as (a) myeloblastic leukaemia, (b) possible chloroma, and (c) chronic lymphatic leukaemia.

H. F.

Bacteriologic Studies in Acute Rheumatic Fever. H. F. Swift and R. A. Kinsella, M. D. *Archives of Int. Med.*, 1917: XIX: 382.

In order to ascertain whether any constant cultural or immunologic type of bacterium was associated with acute rheumatic fever, the authors have studied fifty-eight typical cases of the disease. Blood cultures were made before salicylates had been administered. Cultures from joint fluids were attempted in each case. Eighty-five blood cultures were made on fifty-eight patients, with seven positive results. Two cultures were obtained from the same case, so positive cultures were obtained in only six cases. With the exception of this one instance only a single positive culture was obtained. In three cases positive cultures were obtained at the time of acute pericarditis. Cultures from joint fluids were uniformly negative. Out of five cases with "rheumatic" affection such as endocarditis, pericarditis, chorea, etc., only two positive blood cultures were obtained. Out of six fatal cases, cultures of streptococcus viridans were obtained at autopsy; in three instances only one of these cultures was pure. Cultural and immunologic studies of the streptococci obtained in the blood count placed all the organisms in the viridans group. None of the patients showed antibody formation against their own streptococcus. The authors conclude that no type of streptococcus has been constantly associated with acute rheumatic fever; further they do not believe that an etiologic relationship has been proved between the streptococcus and the disease. The organisms obtained were various members of the viridians group, hence no one of these could be called the streptococcus rheumaticus.

R. D.

ABSTRACTS OF SURGERY

The Most Practical Plan for the Organization, Training and Utilization of the Medical Officers of the Medical Reserve Corps of the United States Army and Navy and of the Medical Officers of the Officers' Reserve Corps of the United States Army in Peace and War. The Wellcome First Prize Essay, 1916. Capt. Mahlon Ashford, M. C., U. S. A., *The Military Surgeon*, XL: No. 2: 1917.

The European war has demonstrated beyond question the essential part played by the medical service in modern warfare. The necessity of a plan for the organization, training and utilization of a large number of physicians for the Medical Section of our own Officers' Reserve Corps has become manifest. The plan must be practicable, comprehensive and progressive and acceptable as a military policy. The training is to begin with the medical student. All matriculates in reputable schools being regarded as potential Medical Reserve officers; optional or compulsory courses in medico-military duties are to be offered as the faculty shall decide. After graduation and the period of hospital internship, the young practitioner as a Reserve Medical Officer continues his training through a four-year correspondence course and annual participation in a summer training camp for a period of fifteen days. Examinations are to be held at the end of the second year of the course for appointment as Captain in the Officers' Reserve Corps of the Army or as a past assistant surgeon in the Navy. At the end of the fourth year of this graduate course, examinations may be taken for the grade of

Major in the Army or Surgeon in the Navy. Further opportunities for advanced or specialized study are to be given as post-graduate courses and direct affiliation is to be maintained between these trained Medical Officers and the Surgeon General of each Department, by means of a quarterly bulletin of information and a system of personal reports.

Attendance at an instruction camp once in three years will also be required. Classification of these reserve medical officers for the various fields of activity is a feature of the plan.

The Army and Navy shall each have a national organization of their reserve medical officers to be affiliated and meet with the American Medical Association. National Councils and State Associations are to be auxiliaries to this organization.

The military organization of the medical reserve is to be:

1st. Medical Cadets. Third and fourth year medical students.

2nd. Commissioned Officers.

- (a) First Lieutenants, Army, or Assistant Surgeons, Navy.
- (b) Captains, Army, or Passed Assistant Surgeons, Navy.
- (c) Majors, Army, or Surgeons, Navy, and a group of specialists, "Consulting Surgeons."

3rd. Retired Officers.

- (a) Retired from field or sea service.
- (b) Wholly retired.

Under the new law, members of the Reserve Officers' Corps, Medical Section will be called to the colors in time of hostilities or threatened hostilities prior to the commissioning of volunteer medical officers. Officers of the Reserve will not be permitted to hold simultaneously a commission in the Organized Militia. Medical Cadets are not to be taken into active service except in base or general hospitals. When called to active service the commissioned officers are to hold rank and draw pay according to the rank held as officers in the Reserve. In times of peace no officer above the rank of First Lieutenant may be called into active service and then only with his own consent.

A. B. E.

The Treatment of Fracture of the Spine. N. Sharpe, *Am. J. M. Sc.*, 1916: CLII: 865.

Sharpe questions the practice of the majority of surgeons who advise that in fracture of the spine, with damage to the cord, without obvious deformity and determinable loose fragments of bone, the symptoms are due to contusion or laceration of the cord, or to hemorrhage, and that it is better to defer operation until the symptoms have come to a standstill, and that fracture with immediate and complete abolition of function below the lesion indicates division of the cord, and no operation is justifiable. He believes that the opponents of early operative interference have overlooked several important facts. In fractures with damage to the cord, short of a complete transverse lesion, there are many fibers and tracts that escape immediate injury. If operation is not done, compression by bone, by hemorrhage, or by edema will destroy the already damaged fibers, and involve many sound ones. Interruption of conductivity of nerve fibers after fracture does not necessarily mean that the fibers are destroyed; many of the interrupted fibers will later functionate, and it is to preserve the integrity of the sound fibers and to give the best chance of recovery to the damaged but not destroyed fibers that early operation is urged. A laminectomy with incision of the dura acts to relieve pressure as does cranial decompression; in fracture-dislocation it relieves the pressure effects of angulation; drainage for edema and hemorrhage is provided. The sensory, motor, and reflex signs of com-

plete severing of the cord do not contraindicate immediate operation, as they may be produced by very slight pressure, and by no means indicate anatomical rupture of all the cord tissue. Such great displacement of the vertebrae as to preclude any doubt as to severing of the cord does, of course, contraindicate operation.

C. H. L.

Laminectomy in Gunshot Injuries of the Spinal Cord. Charters J. Symonds, *The Lancet*, Lond., 1917: CXCII: 93.

Gunshot wounds of the spinal cord form one of the most fatal groups of battle injuries. In the Boer war 58.3 per cent of such cases died. Many die on the field from injury to the cord in the cervical region, or from some associated injury. Of those who survive to reach base hospitals, probably a majority die of renal infection.

The function of the cord may be destroyed by direct laceration by the bullet, by necrosis from concussion, due to the high velocity of the bullet, by laceration and compression from the laminae being driven in, and by pressure from a bullet lodged external to the meninges. Compression by hemorrhage has not been found in any of the author's cases.

In open, suppurating wounds surgical interference should be limited to removal of loose pieces of laminae and keeping up good drainage through an adequate opening. It can never be necessary to open the dura, if it be found uninjured. Excision of the septic area, with suture, is condemned. The danger in these cases lies in meningitis.

When the wound has closed and an aseptic operation can be carried out, the question of recovering bullets, shell, and bone fragments arises. In complete transverse lesions operation is only indicated for the relief of pain, thus rendering the remaining weeks and months bearable. Where evidence of conductivity of the cord exists, operation should be undertaken as soon as possible, care being taken to exclude cases of concussion, and due consideration being given to the general condition.

Injuries of the cauda are peculiar in that regeneration of the nerve trunks, just as in peripheral nerves, will take place spontaneously after bruising and partial laceration and after suture when they have been totally severed. Early operation is advised, and suture attempted if severed trunks are found.

In injuries to the cervical spine, a notable feature is the small degree of cord injury when compared with that occurring in like injuries of the dorsal and lumbar regions. These cases recover so well spontaneously that unless there is pain from pressure on the nerve trunks, it is wiser to leave them alone.

C. H. L.

The Indications for Cholecystectomy. Fred B. Lund, *Surg. Gyn. & Obst.*, 1917: XXIV: 275.

After mentioning the progress in gall-bladder surgery the author states: "We have gradually come now to regard cholecystitis, or infective inflammation of the gall-bladder, as more important than the presence of stones, as usually antecedent to stone formation, and fundamental." In his series of 347 operations he had three cases in which stones reformed after removal, and three of cancer of the gall-bladder, developing after the removal of stones. Statistics from large clinics show symptomatic cure after cholecystostomy has been not more than 75 per cent. In clinics where cholecystostomy formally was the rule, cholecystectomy is done now in 90 per cent of the cases.

Infection may reach the gall-bladder via the duct from the duodenum, but this must be rare. Judd's and Rosenow's observations are evidence that the gall-bladder infections are hematogenous. Infections in the gall-bladder

wall are not cured by cholecystostomy. A gall-bladder with one or more stones and sterile bile may be cured by drainage, but the gall-bladder remains a source of future infection. In such cases enlarged glands along the ducts should lead the surgeon to remove the gall-bladder if there are no contraindications. Jaundice clears as quickly after "ectomy" as after "ostomy." A thickened, stiff walled adherent gall-bladder without stones should be removed. Acutely inflamed gall-bladder especially gangrenous should be removed if not too difficult nor the patient's conditions too poor.

Thickened common ducts should be opened and explored. When the common duct is incised, or there is much trauma and manipulation, if the gall-bladder is not too much thickened or contracted to be used for anastomosis with the duodenum, it should be saved.

Chronic pancreatitis without jaundice and associated with gall-stones is cured by removal of the stones and drainage of the gall tract; if associated with cholecystitis without stones, drainage gives temporary relief, but cholecystectomy is necessary to cure.

Judd has noticed that the common duct becomes dilated after cholecystectomy. This ought to prevent the milder forms of pancreatitis. Removal is also indicated—whenever suspicion exists of malignant disease.

Cholecystostomy should be performed:

1. In all cases of acutely inflamed gall-bladders, with or without stones, in which the patient's condition or the technical difficulties render removal unsafe.
 2. In pancreatitis with jaundice.
 3. In cases in which the common duct is strictured or likely to become so, and in which the gall-bladder is not too thickened nor contracted to be of value for purposes of anastomosis.
- A. S.

Relative Merits of Cholecystostomy and Cholecystectomy. Chas H. Mayo, *Surg. Gynec. & Obst.*, 1917: XXIV: 281.

First as to the necessity of a gall-bladder, Mayo points out that ten patients were in good health 15 years after cholecystectomies. Cholesterin is an important constituent of gall stones. Cholesterin is found increased in the blood of adults with growing cells; 75 per cent of gall-stones occur in women and 80 per cent of these women first notice the symptoms during pregnancy.

One-fourth of the diseased gall-bladders do not contain stones. In many, inflammation has caused papillary growths from the mucosa. These are potentially productive of cancer. Cholecystectomy is indicated:

1. In the case of a cystic gall-bladder with destroyed mucosa, empyema, and functionless strawberry gall-bladder.
2. In cholecystitis severe enough to give symptoms; as cholecystostomy with its temporary drainage could not eradicate the inflammation of the gall-bladder.
3. When the gall-bladder gives marked evidence of associated functional derangement of the stomach.

Cholecystostomy gives a high percentage of cures when the evidence of disease is slight, stones are present and gastric symptoms absent. It is indicated in associated pancreatitis, and also in pregnancy, and for old people. Mayo urges that the cystic duct be isolated early, and the common duct viewed before division of the cystic. In answer to letters he notes that 53 per cent of cholecystostomy cases reported cured and a large majority of the remainder improved. Of those who had had cholecystectomies, 71 per cent were cured and a large percentage improved. From November, 1915, to October, 1916, the Mayo clinic performed 43 cholecystostomies with a

mortality of 14 per cent, half of the deaths being from cancer; 776 cholecystectomies with a mortality of 1.77 per cent, and 102 choledochotomies with a mortality of 7.84 per cent.

A. S.

Cholecystostomy Versus Cholecystectomy. John B. Deaver, *Surg. Gynec. & Obst.*, 1917: XXIV: 284.

Dr. Deaver has come to the conclusion that the mortality difference in the two types of operation is nothing compared with the mortality due to the local disease and general conditions of the patients. It is the metabolic disturbances, the lowered resistance, the organic degenerations consequent upon the infections that contribute by far the greater part of the surgical mortality. Cholecystectomy in the average case will show an immediate mortality slightly in excess of cholecystostomy. He then states the indications for cholecystectomy, agreeing with Mayo and Lund.

In 65 per cent of the cases of recurrence after cholecystostomy the cause of recurrence was traceable directly to failure to remove the gall-bladder. There were 19 cases of stone in the gall-bladder or cystic duct; cystic duct stricture, 2; relighted infection in the gall-bladder, 6; pancreatitis, 4; adhesions, 4. Recurrences after cholecystectomy included 1 pancreatitis; duodenal fistula, 1; common duct stricture, 3; stone or stones in common or hepatic duct, 3.

Cholecystectomy in selected cases by a good surgeon gives best results. Deaver has not seen subsequent dilations of common duct or stump of cystic duct in 1,800 operations.

When the infections are more cholangitic and intrahepatic, as evidenced by minor appearances of inflammation of the gall-bladder with thickening, enlargement, and "streaky" appearance of the liver, or, secondly, when the major lesion is in the pancreas or common duct, the author prefers cholecystoduodenostomy or prolonged drainage by cholecystostomy.

A. S.

The Treatment of Stricture of the Deep Urethra. Franklin R. Wright, *Urologic and Cutaneous Review*, 1917: XXI: 133.

The author divides all strictures into inflammatory, traumatic and such inflammatory ones which have been operated upon and thereby have had true scar tissue added to them.

Ninety per cent of all strictures are inflammatory.

The author goes into the pathology of strictures and emphasizes the fact that strictures are formed over a long period. The accepted method of treatment is by dilatation. Divulsion he discards altogether, as he says that torn tissue always adds to our trouble by the addition of a scar. Dilatation he performs in two ways, either by temporary or continuous pressure.

Heat and the hot sitz bath are the best topical means for the relief of pain and inflammation. Attempts at dilatation of traumatic strictures in the author's hands have proved futile, and he advises operation as soon as diagnosed. After an inflammatory stricture has been dilated to normal capacity he advises an occasional sound for several months and the calibre of the canal must be full size for a year. Failure to keep a stricture properly dilated is the cause of most of the disappointments on the part of the patient and surgeon.

T. P. S.

Renal Tuberculosis. A. G. Rytina, *Annals of Surgery*, 1917: LXV: 346.

The author reports three cases of renal tuberculosis, representing various types of the disease.

The first one was present in a generalized tuberculosis in which the disease did not progress at all after the removal of the chief focus.

The second case proves that renal tuberculosis cannot always be diagnosed by inspection and palpation at the time of operation. The point which the author wishes to bring out is that the diagnosis should be made definitely before operation by means of the cystoscope, catheterization of the ureters, and that the kidney be removed at the time of operation, irrespective of the surface appearance of the kidney.

The third case indicates that an entire kidney may be destroyed by tuberculosis without producing any change in the general physical condition of the patient.

The author states in closing that exploratory diagnosis of renal tuberculosis by inspection and palpation is entirely erroneous; indeed, it is possible that bisection of the kidney from pole to pole at the time of the operation may fail to reveal the site of infection.

T. P. S.

ABSTRACTS OF NEUROLOGY

Stock-Brainedness, the Causative Factor in the So-called "Crossed Aphasias" Foster Kennedy, *Am. J. M. Sc.*, 1916: CLII: 849.

In 1908, Pierre Marie advanced apparently irrefragable evidence to disprove the conception that the motor speech center is located in the third frontal convolution, the so-called Broca's area. The entire subject of the causation of aphasia became a question of much controversy and confusion. Cases of motor aphasia occur in which Broca's area is intact as well as those in which it is destroyed.

The author cites six cases of hemiplegia, three in left-handed individuals, and three in right-handed individuals, due to lesion of the motor cortex including Broca's area. Of the three left-handed patients, two had left-sided hemiplegia without aphasia, and one right-sided hemiplegia with aphasia. The three right-handed patients showed left-sided hemiplegia with aphasia.

As an explanation of these confusing cases of aphasia present when theoretically it should be absent, and *vice versa*, the author advances the theory of "Stock-Brainedness." The right-handed individuals gave a definite history of an ancestry of left-handed individuals, and the left-handed an ancestry of right-handed individuals. The anomalous condition is explained by the theory that the speech center is located on the same side of the brain as in collateral relatives and ancestors and that the right or left-handedness is an individual peculiarity.

T. S. K.

Tumors of the Thymus in Myasthenia Gravis. E. T. Bell, *J. of Nerv. & Ment. Dis.*, 1917: XLV: 130.

Since 1901 fifty-six autopsies of cases of myasthenia gravis have been described. In seventeen of these cases the thymus was described as enlarged, and in ten others as containing a tumor. Involvement of the thymus, therefore, occurred in practically half the cases. The enlarged or persistent thymus was usually described as showing normal histologic structure or simple hyperplasia. In a case described by Burr the myasthenic symptoms disappeared after thymectomy.

Of the cases having tumors of the thymus, five show a histological picture indicating a benign tumor in which the tissue corresponds closely to the structure of the embryonic thymus. This type of tumor seems to occur only in myasthenia. Tumors of the thymus without myasthenic symptoms are not infrequent. However, they are usually malignant tumors, differing entirely from the tissue described in the cases of myasthenia gravis.

"Thymic lesions cannot be regarded as the cause of myasthenia, since they are present in only about half the cases. Probably the abnormal thymus is due to some more fundamental disorder, which is also responsible for the muscle weakness and other features of the disease."

T. S. K.

ABSTRACTS OF PEDIATRICS AND CONTAGIOUS DISEASES

On the Etiology of Scarlet Fever. W. Mair, *J. Path. & Bacteriol.*, Lond., 1916: XX: 366.

In January of 1915, Mair published a paper on "Experimental Scarlet Fever in the Monkey," in the *Journal of Pathology and Bacteriology*, in which he gave a preliminary description of a diplococcus isolated from the throats of scarlet fever patients, and showed that it produced in monkeys a disease resembling scarlet fever in several respects. At that time he suggested the name *Diplococcus scarlatinae*.

The present communication deals with the morphological and cultural characters, and conditions of growth, pathogenicity for the laboratory animals and immune reactions. The author has found that the diplococcus produces in monkeys a disease which in many respects resembles scarlet fever. The most striking point of resemblance is the characteristic change in the polymorphonuclear leucocytes. The local tissue necrosis near the site of injection corresponds to the sloughing of the fauces and of the tissues of the neck in the so-called septic cases of scarlet fever. The most outstanding clinical feature of scarlet fever, namely, the rash, has not been reproduced in the monkey.

The author believes that additional evidence in favor of the diplococcal theory is found in the fact that complement fixation reactions occur with much greater frequency and with greater intensity in scarlet fever than in control cases. He found complement fixation to be distinctly positive in one case on the third day of the diseases, while on the tenth and seventeenth days it could not be detected. From this observation the author concludes that the diplococcus is not a secondary invader.

H. O. R.

La Tache Mongolique a Sao-Paulo. Clemente Ferreira, *Arch. de med. d. enf.*, Par., 1916: XIX: 536.

During 1915, 371 babies were examined at Sao-Paulo for mongolian spots. Of 343 white babies, 11, or 3 per cent, showed mongolian spots; of 9 negro babies, 6, or 66 per cent, and of 19 babies of mixed blood, 10, or 52 per cent.

The location of mongolian spots was as follows:

Sacro-coccygeal region	10 times
Lumbo-sacral region	6 "
Intergluteal fold	6 "
Intergluteal fold and buttocks.....	1 time
Buttocks	3 times
Left buttock	1 time

J. E. McC.

The Operative Treatment of Brachial Plexus Paralysis. William Sharpe, *J. Am. M. Ass.*, 1916: LXVI: 876-81.

The most frequent cause is "prolonged forcible separation of head from shoulders by lateral extension during difficult labor." Sharpe reports 56 cases with operation. Of these 70 per cent were of the right arm; 78 per cent followed head presentation; 22 per cent after breech. The types are (1) total paralysis of arm, and (2) incomplete paralysis. The latter is subdivided into (a) upper arm type, (b) lower arm type and (c) combined type.

In the upper arm type the atrophy of the shoulder muscles is not so extreme as in poliomyelitis, because the nerve roots are not entirely severed. The lower arm type alone is infrequent. In the upper arm type anterior dis-

location of the head of the humerus often occurs, due to the unopposed action of the pectoral muscles. The same factor accounts for the inward rotation of the arm.

Under treatment, it is recommended to immobilize and elevate shoulder in mild cases. Improvement may continue as long as one year. In complete paralysis of the arm, Sharpe recommends operation at the end of the first month with repair of the plexus. The arguments for this early operation are; (1) The child will stand operation better at one month than earlier and as well as at any time several months later; (2) less scar tissue has formed and there is less separation of severed nerves; (3) the earlier the nerve anastomosis is made, the better the union.

The technic of the operation is described and the author's results given. There were 56 operations with no deaths. Children operated at three months made excellent recoveries, but best results were obtained at one month. A good description of the anatomy is given.

J. E. McC.

Poliomyelitis: The Preparalytic Stage and Diagnosis. John Ruhrah, *Am. J. M. Sc.*, 1917: CLII: 178.

Abortive cases are divided into four classes:

1. Those with the course of a general infection.
2. Those showing meningeal irritation.
3. Those with marked pains suggesting an influenza.
4. Those with accompanying gastro-intestinal disturbances.

To these classes, originally suggested by Wickman, the author adds a fifth class—an anginal form or that class of cases beginning with a sore throat. Ruhrah emphasizes the importance of the examination of the cerebrospinal fluid as an aid to diagnosis. The fluid is sterile and in all, except very occasional cases, is clear. The number of cells is definitely increased. The normal fluid contains five to ten cells per cubic millimeter, while in poliomyelitis the number is increased all the way from sixteen to one hundred or even to five hundred. In the early stage, before paralysis, the chief type of cell is the polymorphonuclear. They may form 80 to 90 per cent of the cells present. After the paralysis the mononuclear cells form from 75 to 100 per cent of the cells present. After the first two weeks the cell count is nearly normal. The fluid gives a reduction of Fehling's solution like a normal fluid, which fact may aid in the differentiation from tuberculous meningitis. During the first week globulin is found in one-half of the fluids examined. Ruhrah stated that he does not recall a case of tuberculous meningitis seen in recent years in which the tubercle bacillus could not be demonstrated if sufficient time were given to the search.

H. C. K.

Diagnosis of Tuberculous Meningitis. M. Kasahara, *Am. J. Dis. Child.*, 1917: XIII: 141.

Kasahara describes a method of specific diagnosis of tuberculous meningitis, by a focal reaction to tuberculin. Lumbar puncture is performed and a certain amount of fluid taken for cytologic examination. Then an intradural injection of Koch's old tuberculin, well diluted, is made. The amount injected is given as from 0.01 to 0.002 mg. diluted to a bulk of from 0.5 to 1 c.c. with normal saline. After twelve to twenty-four hours lumbar puncture is repeated and the fluid obtained compared with the first specimen. The most conspicuous change is an increase in the cell count of the fluid, the red cells being particularly increased.

H. C. K.

ABSTRACTS OF GYNECOLOGY AND OBSTETRICS

Cholesterol in Blood of Mother and Foetus: A Preliminary Note.

J. Morris Slemons and Charles S. Curtis, *Am. J. of Obst.*, 1917: LXXV: 569.

Ahlfeld's work indicated that fat cannot pass the placental membranes, but clinical facts have thrown doubt upon this. Fat women give birth to fat babies. However, analysis of the fat content of the blood of mothers and foetuses show no attempt at equilibrium between the amounts in the two circulations.

Cholesterol is important in the bodily functions. It unites with fatty acids to form lipoids as glycerine unites with them to form fats. In the present series of observations upon mothers and babies, the amounts of cholesterol have been estimated by the method of Bloor, which requires the use of only 3 cm. of blood. The amount of cholesterol varies greatly normally, about half being free and the other half bound as cholesterol esthers. The foetal cholesterol varies from 115 to 225 mg. per 100 c.c. of the blood, but it is always less than the maternal, which ranges from 210 to 310 mg. However, the foetal cholesterol is always free, and exactly equals in amount the free cholesterol of the mother. That is, it equals the total cholesterol of the mother less the cholesterol esthers.

Cholesterol esthers are never present in the foetus except very rarely, in small amounts, after an anesthetic. This is sufficient evidence that cholesterol passes the placental membrane, but there is no evidence as to which direction it passes.

A high cholesterol is seen in eclampsia, but this cannot account for the disease, as larger amounts are occasionally found in normal cases. The cholesterol content may, however, be of use in differentiating preclampsic conditions from strictly nephritic ones, where the cholesterol content is always low.

J. T. S., Jr.

The Variations in the Blood Supply of the Ovary, and Their Possible Operative Importance. John A. Sampson, *Surg. Gynec. & Obst.*, 1917: XXIV: 339.

This work is based upon the arterial injection with gelatin and Sudan II of six foetal and thirty adult specimens. Stereoscopic roentgenograms were made, and India ink tracings.

Specimens from a 26 cm. foetus showed that the tube may receive all its blood from the uterine artery before its anastomosis with the ovarian, or the inner middle thirds may be supplied from the uterine while the fimbriae may derive their blood from the ovarian artery. One 44 cm. foetus showed no utero-ovarian anastomosis.

In adults, also, the fimbriae are generally supplied by the ovarian, but may be fed from the uterine (6 out of 30 cases). As the ovarian artery approaches the ovary, it generally splits into two parts, one going to the ovary, and one tubo-ovarian division. The latter may be absent. The tube is supplied by three vessels: (1) Arteria tubae medialis, from the uterine. (2) Art. tubae intermedialis, the largest, generally direct from the uterine, but sometimes from the fundal branch of the uterine, and once found coming from the epigastric through the round ligament. (3) Art. tubae lateralis, generally but not always from the ovarian artery.

There are three types of arterial distribution to the ovary:

1. Distal part of ovary supplied by ovarian, proximal part by uterine. The lateral tubal artery (No. 3, above) comes from the ovarian.

2. Lateral tubal artery comes from the median tubal artery, so is uterine in origin. Middle part of ovary supplied from the ovarian; both proximal and distal parts from the uterine.

3. Lateral tubal artery derived from median artery, but does not supply any part of the ovary. Distal part of ovary supplied from ovarian; proximal from uterine.

The conclusion is that a salpingectomy almost always injures the blood supply to the ovary of that side. In a hysterectomy, therefore, where the ovaries are to be saved, it may be wiser to save the tubes also.

J. T. S., Jr.

Hydatidiform Mole and Chorionepithelioma. Michele Caturani, *Am. J. of Obst.*, 1917: LXXV: 591.

In normal early pregnancy, the chorion invades and destroys the endometrium. The same is true of the villi of hydatidiform moles. Is there any histological feature of these moles that indicates whether or not they become malignant? Evidence must be obtained from uteri removed *in toto*, with tumors in place; not from mere curettings. The presence of wandering syncytial cells in the myometrium does not prove malignancy, for they are found in normal pregnancy. A benign mole shows an equilibrium between the connective-tissue core and the epithelial elements. Invasive malignant moles must be differentiated from true chorionepitheliomata. The latter are ectodermal in character, consisting of syncytial elements alone, or of Langhans' and syncytial elements. The invasive moles always have connective-tissue (mesodermal) cores. Moreover, these moles invade by direct continuity. The value of decidual resistance to invasion is doubtful, for malignancy is rare in tubal pregnancies, although in such cases the decidua is very thin.

A transitional form to true chorionepithelioma is found when the invasive moles show a tendency to break down the equilibrium between the core and the epithelium of the villi, and the epithelial elements proliferate. The division line is indefinite, however. The core is only incidental—a measure of the rapidity of epithelial proliferation. Syncytioma gives a better prognosis than the more highly evolved chorionepithelioma.

The author's conclusions are: 1. Vacuolated syncytium and Langhans' cells in active proliferation, with small villus core, in a hydatidiform mole, point to malignancy. 2. Real evidence of malignancy is found in the relation of the mole to the maternal tissues. 3. Invasive moles are generally real transition forms to chorionepithelioma. They are best called chorionadenoma malignum. 4. Reduce Marchand's classification to two heads: Syncytioma and chorionepithelioma. The latter is more highly developed, and shows Langhans' cells as well as syncytial masses.

J. T. S., Jr.

ABSTRACTS OF DERMATOLOGY

The Treatment of Acne. R. A. MacDowell, *Jour. Cut. Dis.*, 1917: XXXV: 90.

Intestinal fermentation is a big factor in the treatment of acne and is due to eating fermentable foods and inability to prevent such foods from fermenting. The author would withdraw breakfast cereals, potatoes, fresh bread, macaroni, apples, bananas and nuts—likewise everything sweet. Later this diet may be amplified. The patient's teeth should be kept in good condition. Internally the author recommends:

Rx.

Aloin,	.10
Ichthyol,	10.0
Pulv. of Glycyrrhizae Co.	q.s.
Misce et ft.	Capsules XXX.
Sig.	dr. t. i. d. p. c.

He believes in the efficacy of sunlight and soap for such cases—likewise in the use of X-ray. He has not had success with vaccines, except in some suppurative cases.

Discussion:

Dr. Ravogli, Cincinnati:

Thinks that physicians rely too much on the use of vaccines. He, too, has found that many of these cases are suffering from constipation.

Dr. Wallhauser, Newark, N. J.:

Felt that internal causes of acne should be considered only as contributory. He felt it to be a local infection. He uses an alcohol wash locally with incision of all pustules.

Dr. Davis, Philadelphia:

Uses locally a lava soap which cures the tops of the lesions. Afterwards he uses ordinary lotions. People should be taught to chew properly.

Dr. Weiss, New York:

In most cases of acne one finds subthyroid conditions—cold feet and hands, erythema, dry skin, brittle nails, fatigue, constipation—all thyroid shortcomings. In such cases he uses one-fourth to one-half a grain thyroid extract twice daily. Of course, close supervision must be exercised.

Dr. Gilchrist, Baltimore:

Thinks that the bacillus acne is causal with the streptococcus and staphylococcus as secondary agents. In his experience the X-ray has been overworked with this disease—often with harm to the patient. When vaccine therapy first came in it was run to death, but now it is getting down to its proper level. In relapses he found one heavy dose of bacillus acnes, or two, was sufficient for six to twelve months more. The first time he used one hundred or two hundred million bacilli and had the patient rest for twenty-four hours. Another dose was administered in a week or ten days and then the vaccine stopped.

H. N. C.

ABSTRACTS OF OPHTHALMOLOGY

The Relation of the Mouth to Ocular Diseases. Wm. C. Finnof, M. D., Oph. D., *Ann. Ophth.*, 1917: XXVI: 66.

Focal infection in the mouth has unquestionably played a very important part in many pathological conditions of the eye. Pyorrhoëa alveolaris is probably the most frequent oral basis of inflammatory ocular lesions, while blind alveolar abscesses probably rank second. Alveolar abscesses with small fistulous openings drain with difficulty and are dangerous. Imperfectly filled and septic roots, periapical abscesses, and impacted teeth are all sources of ocular disturbance. The diagnosis of many of these oral lesions is difficult, and for their study the roentgenogram is almost indispensable. Ocular processes considered secondary to foci of mouth infection, but associated with suppurating nasal accessory sinuses either primary or secondary to dental infection, will require for relief that the diseased sinus be properly drained as well as that the teeth be given proper attention.

R. D. M.

The Influence of Vascular Disease in the Retina on the Prognosis as Regards Life. P. H. Adams, F. R. C. S., D. O., *The Brit. J. of Ophth.*, 1917: I: 161.

The most numerous cases of general medical interest seen by ophthalmic surgeons are those that have some form of disease of the vascular system. Not infrequently failure of vision is the first symptom the patient observes,

and this causes him to consult an oculist, who finds in the retina the various pathological conditions associated with arteriosclerosis. After studying 159 cases of the retinal manifestations of vascular disease, the author concludes they are more common in women than in men, and that not altogether due to child bearing, as 38 of the 96 women were unmarried. The cases were most numerous between the ages of 60 and 70 and next between 50 and 60.

The older the patient, the better the prognosis as regards life, irrespective of the presence of a large amount of albumen in the urine, while the younger the patient the worse the prognosis, especially so if albumen is present in the urine.

R. D. M.

Ophthalmia Neonatorum. George H. Thompson, M. D., F. A. C. S., in the *Boston M. and S. J.*, 1916: CLXXIV: 745.

The author quotes Parson's characterization, "a preventable disease occurring as the result of carelessness at the time of birth." That this carelessness is not chiefly attributable to midwives seems established by the study of these cases at the Massachusetts Charitable Eye and Ear Infirmary, where physicians were found to be mainly responsible for blindness from the disease. This is not held to prove that in these cases the midwives were more careful than physicians, for the former attended but 10 of the 388 cases observed. However, in the State of New York 40 per cent of the births were attended by midwives, while but one-third of the cases of ophthalmia occurred in patients under their care. In a further series of 104 cases occurring in Massachusetts, private physicians were not only responsible for 85 per cent, but undertook the care of 43 per cent, with resultant blindness in 20 per cent.

Instillation into the eyes of one per cent solution of nitrate of silver shortly after birth is the prophylactic measure favored, and it is urged that no case of ophthalmia be discharged from treatment until two negative smears are secured at intervals of 48 hours, for the gonococcus has been found 25 days following apparent cure.

R. D. M.

ABSTRACTS OF LARYNGOLOGY, RHINOLOGY AND OTOLOGY

Sphenoid Sinus—Present Day Value of Surgical Procedure. Ross Hall Skillern, Philadelphia, *J. of Lar., Rhin. & Ot.*, London, 1917: XXXII: 52.

Skillern, under the above title, discusses the operative procedure upon the sphenoid sinus up to the present time. Under operations the various methods are briefly referred to in the order of their development. The conservative method, where none of the adjacent intranasal structures are sacrificed; and the radical, when the posterior part of the superior and middle turbinates, as well as the posterior ethmoid labyrinth, are removed, are briefly described. The indications for the radical operation he enumerates as (1) the classical form with retention, pain and permanent pathological changes, (2) presence of orbital or cerebral complications, (3) after failure of conservative measures and (4) mucocoele or pyocoele of long standing. The anatomical configuration will not infrequently determine the type of operation.

The value of the present day methods in the various pathological conditions is then discussed quite fully, and this is followed by a rather minute discussion of the various individual operations, special stress being laid on their advantages and disadvantages.

Due reference is given to the various accidents occurring during the operation as collected from the literature, while the after treatment is covered in a few brief paragraphs.

The immediate and ultimate results of the conservative, but most especially the radical operation, Skillern regards as most brilliant. He recites one of his own cases which had been moribund for 48 hours, where the operation was done practically without anaesthesia. In 5 hours the patient was asking for food.

The value of the operation he considers beyond question and concludes that "on account of the almost uniformly brilliant results obtained and its comparative freedom from danger, it must be classed as a procedure which no rhinologist of the present day can afford not to master."

Altogether the article is most comprehensive and illuminating and is founded upon the author's individual experience, as well as 54 references to the literature.

W. B. C.

Cerebellar Abscess. Symptoms and Differential Diagnosis. P. D.

Kerrison, M. D., *Laryngoscope*, 1916: XXVI: 1327.

The author states that in so brief a paper it is only possible to enumerate the principal symptoms; that a full discussion of the subject is impossible. The article is so full of essential things that a review of it is difficult, and it is only possible to mention briefly the most essential points.

In cerebellar abscess the temperature runs along near the normal line with occasional variations from one to two degrees above to one degree below normal. The pulse is slow, falling to sixty, fifty or even forty. Headache varies, but if present it is more constant, more persistently severe and less variable in location than in cerebral abscess. Vomiting is common in the beginning of any brain lesion, and frequently recurs in cerebellar lesions. Insomnia, intractable and not amenable to opiates may be present. The patient is drowsy, but does not sleep. Mental lethargy and delayed cerebration are common and characteristic symptoms of temporal sphenoidal abscess, but are usually absent in cerebellar abscess. Unclouded mentality with signs of brain abscess speak for a cerebellar lesion. The eye symptoms may be unilateral or bilateral. Present or absent they are more common in cerebellar than in cerebral lesions. The patient lacks physical tone, is emaciated and presents ominous appearance of extreme illness. Movements of the head may cause pain in cerebellar abscess and the patient supports his head with his hands when he moves it. This symptom is not always present, but is very suggestive when it is seen.

Focal symptoms.—Nystagmus is variable as to direction and constancy, gradually increasing. Cerebellar ataxia. The patient tends to fall in one direction. Unilateral incoordination, diadokokinesis (Babinski) usually present. Pointing test on the affected side deviates outward. Past pointing. Nystagmus from turning, or irrigation gives past pointing in the opposite direction from the nystagmus, normally. In cerebellar abscess the hand on the side of the lesion continues to show a tendency to point outward regardless of the nystagmus. Spontaneous outward deviation of the arm and loss of normal vestibular reaction are pathognomonic symptoms of cerebellar abscess. Speech is usually slow and labored.

Recapitulation: Low grade sub-normal temperature, slow pulse, recurrent vomiting, persistent occipital headache, nystagmus of central origin, unilateral incoordination, speech defects, variation in the pointing and the past pointing test, with or without eye symptoms, all speak for cerebellar abscess.

J. M. I.

The Treatment of Frontal Sinus Suppuration. Dr. Howard A. Lothrop, Boston, *The Laryngoscope*, 1917: XXVII: 1.

The author maintains that inadequate drainage is the chief factor in the prolongation of frontal sinus suppuration.

For those cases which have not yielded to the usual methods of intra-nasal drainage and for all chronic cases, the author recommends an original operation.

Radiographs, both antero-posterior and lateral, are essential in determining the outlines of the sinuses. It is presumed that the anterior end of the middle turbinate and anterior ethmoid cells have been removed in a previous attempt to effect a cure.

Posterior nares plugged from the pharynx. A one-inch incision is made in the eyebrow, beginning internal to the supra-orbital notch to avoid the nerve. An opening adequate for inspection is made into the sinus. The ostium is located, and by means of curettes, curved rasps and hand burrs, working from below through the nose, the floor of the sinus is removed from the ostium forward. The opposite sinus is now entered by removing the septum, and the floor of that sinus removed in like manner. A U-shaped portion of the nasal septum, in the perpendicular plate of the ethmoid, is removed, but not as far as the cartilage. Thus practically all of the floor of both sinuses is taken away, and either sinus is accessible from either nostril.

The external opening is closed and no packing used.

In a series of thirty (30) cases a cure resulted in most of them, in a few weeks. No complications arose from the opening of the previously healthy sinus.

A. E. P.

ABSTRACTS OF PATHOLOGY

Mechanism of Tumor Growth in Crown Gall. Edwin F. Smith, *J. of Agric. Research*, 1917: VIII: 165.

Crown gall is an example of multiple tumor-like masses of malignant character occurring in plants and is due to the bacterium *tumefaciens* which eliminates a substance, probably ammonia, which is the exciting cause of the atypical growth. Tumor growth, in general, is not a chemical but a physical phenomenon. The abnormal cell proliferation is due to the removal of local growth inhibitions by local increase in osmotic pressure. In crown gall the removal of growth inhibition results from the locally increased osmotic pressure, of the substances liberated within the tumor cells through the metabolism of the imprisoned bacteria. Continued growth necessitates the constant discharge locally of the activating substance which may be almost any soluble substance. Some substances produce cell hyperplasia, others cell hypertrophy and others multinucleated cells. The changes in osmotic pressure and surface tension locally are probably the determining factors in the production of tumors in animals and man as well as in plants. Many excellent photographs of plants are given illustrating the effect of injections of ammonia, ammonium salts, malic acid, sodium bicarbonate, etc., in producing local tumors, in plants.

H. R. W.

The Luetin Reaction. R. Stangiale, *Reforma Med., Mexico*, 1917: XXX: 111, No. 2.

From an extensive series of parallel luetin and Wassermann reactions, the conclusion is made that the luetin test is the more valuable test in the diagnosis of hereditary syphilis, surpassing the Wassermann reaction; the form of skin reaction most frequently met with is the papulous; in non-syphilitic cases the test has been invariably negative; five days is the average length of time necessary for the appearance of the skin reaction; and the treatment immediately preceding the test whether mercurial, iodide or salvarsan, seems to have no effect on the reaction.

A. A. E.

The Virulence of Diphtheria Bacilli from Diphtheria Patients and Diphtheria Carriers. George H. Weaver, *J. Infect. Dis.*, 1917:XX:125.

Carriers of non-virulent diphtheria bacilli are not a source of danger and should not be subject to isolation, because a non-virulent strain cannot be converted into a virulent one. Diphtheria bacilli from patients with diphtheria and from carriers who have been in contact with diphtheria patients, are practically always virulent and usually remain virulent up to their disappearance even though a long time has elapsed. Consequently, carriers should be isolated until the absence of the bacilli is established, or their non-virulence proven. In all suspected cases, cultures should be made from the nose as well as from the throat. The persistent carriage of diphtheria bacilli usually depends on local conditions such as diseased tonsils, adenoids, or sinuses.

H. R. W.

DEPARTMENT OF THERAPEUTICS

Conducted by J. B. McGEE, M. D., Cleveland

Cardiovascular Disease: Charles Lyman Greene, in the *New York Medical Journal* for January 27th, writes upon the retardation and prevention of cardiovascular disease. Only within the past few years has it become possible for the medical man measurably to retard and to a considerable degree prevent cardiovascular disease. The two infections largely responsible for cardiovascular disease are acute rheumatism and syphilis, the former producing chiefly primary mitral valvulitis of the acute endocarditic type and the more active primary types of myocarditis and endocarditis in infancy, childhood and the early decades of adult life; the latter affecting for the most part the older groups, and exerting its effects chiefly upon the aortic valves, arteries and myocardium. As to acute rheumatism, the opinion has gained ground steadily during the past few years that myocardial toxemia is seldom or never lacking in this and many other acute prostrating infections, and that endocardial damage often occurs far more frequently than at present is recognized or believed, though in neither case need permanent degenerative or inflammatory residual changes result. The etiological role of syphilis is far greater than was thought possible prior to the introduction of the Wassermann and luetin tests. Two points of special importance might be mentioned: One, the now fully proved worthlessness of a denial of syphilitic infection, whatever the apparent impeccability of the patient; the other, the untrustworthiness and inconclusiveness of the Wassermann test when performed by any but thoroughly trained and up to date serologists. The effect of the revelations relating to syphilis in the cardiovascular field has been such as to emphasize greatly the prophylactic and retarding value and importance of early, efficient, long-continued and, if necessary, frequently repeated antiluetic treatment. He believes these conclusions to be justified. (1) It has now become possible measurably to retard and to a considerable degree prevent cardiovascular diseases. (2) It is imperatively necessary in the interests of the cardiopath and of the race that a justifiable optimism should replace the almost universal pessimism now existing. (3) A knowledge of the specific bacterial origin of diseases of the heart should be promulgated, together with the means best adapted to the control of causative conditions. (4) Our old ideas with relation to cardiac dimensions should be radically revised, and brought into correspondence with the facts as at present definitely established. (5) Modern methods of percussion, accurate and definitive, should replace the older practice still in vogue. (6) The cardinal value and importance, together with the nature and diversity of subjective symptoms of cardiac insufficiency, should receive their full value as means of early diagnosis, and indicators for therapeutic activity. (7) The extraordinary usefulness of test doses of digitalis, with or without physical rest, constitute the very foundation of timely diagnosis.

(8) A thorough understanding of the anatomical peculiarities of the drop-heart is essential, because of its association with a definite constitutional state, its remarkable prolixity with respect to symptoms of a most varied and obscure character, together with the misleading narrow diameters present even in dilatation. (9) The common occurrence of the drop-heart, its constant relationship to general visceroptosis, of which it is a part, its frequent association with so-called nervous dyspepsia, and the almost universal tendency to lose sight of the true cause of its symptoms by referring them to the bastard symptom conglomerate long known as neurasthenia, are facts of decided clinical importance. (10) The existence of the drop-heart in the male is a matter of great importance with respect to the fitness of its possessor for manual labor and actual service in warfare. (11) An application of these newer discoveries in this field cannot fail to exercise a striking effect on these cases.

Calcium Salts: John Aulde, in the *Medical Record* for March 10th, contributes an article upon calcium salts for acidity and associated disorders. He presents a summary of calcium therapy. (1) As a proximate principle, calcium is an essential factor in maintaining structure and promoting function in both animal and vegetable life, deficiency or depletion in humans being characterized by physical debility, as in Bright's disease (nephritis), tuberculosis and diabetes mellitus; increased susceptibility to infection, as in malnutrition, and mental deterioration, the latter especially noticeable in backward children. (2) Acidity, a diminished alkalinity of the body fluids (blood and lymph) and tissues, including bone and nerve tissue; is the pivot or turning point, the line of demarcation, between health and disease, because it depletes the calcium, impairs function and structure, leading to the formation of cellular poisons along with the growth and multiplication of bacteria. (3) As a result of acidity, then, there are three distinct deviations from normal, namely, bacterial invasion, formation of cytotoxins, and calcium depletion. The first and second deviations being secondary to the last, it follows that calcium depletion or deficiency is the connecting link in the chain. (4) Calcium is antacid, catalytic and reconstructive—it neutralizes acidity, complements the vital or cellular activities by its mere presence, and in substantial doses recoups the depleted tissues, notably by its rejuvenating effect upon the protein molecule, the first line of defence against bacterial invasion. (5) Calcium salts aid digestion by augmenting the physical energies and functional activities of the glandular structures responsible for the production of digestive ferments. The value of calcium salts as a yeast nutriment has been conclusively demonstrated by scientific test at the Mellon Institute, Pittsburgh. It is estimated that the employment of the formula recommended, if used in the wheat yield of Kansas alone would add 80,000,000 pounds of bread to the ordinary output and lessen the expense for yeast by an amount even greater than the value of the surplus bread. (6) As a stabilizer of the nervous system, calcium salts occupy an important position, examples being found in spasmodic asthma, hay fever and cholera, or St. Vitus dance. As a reconstructive in wasting diseases they have met with decided favor, and the same is true of arthritis and chronic rheumatism, so-called. In diseases of children and the derangement of function incident to adolescence, where acidity is the dominant factor, calcium medication affords a most promising outlook. With the exception of the chloride, which is readily soluble in water, the calcium salts should be given in the form of a trituration, equal parts of the crude substance and sugar of milk. The dose of calcium salts is discretionary, not arbitrary. A child of five years of age should have five grains of the trituration three times a day.

Fat in Diabetes: Frederick M. Allen, in the *American Journal of the Medical Sciences* for March, considers the role of fat in diabetes. He discusses it in relation to three subjects—lipemia, acidosis and the influence of carbohydrate utilization. He states that first we may take the classical treatment of severe diabetes. This has been based upon a too clever caloric conception. The tendency of the diabetic is to emaciate because of deficient assimilation. The superficially smart idea has been to force up his weight by the trick of crowding calories into the diet to replace those lost in the urine, and of supplying these calories in the form of a food of which the body has only slight ability to relieve itself by excretion, namely, fat. Fat unbalanced by adequate quantities of other foods is a poison. After a few days of pure fat diet, the most voracious cur will starve to death before he will touch it further, and the more strictly carnivorous cat is still less tolerant of fat-rich diet. Against forced feeding the organism protects itself by vomiting, diarrhea and remarkable cessation of absorption. The fact is that the usual diabetic diet will send a diabetic dog into coma, and it is questionable how long normal dogs could tolerate it. It thus appears that patients were right in much of their conduct, and their stealing of carbohydrate was not entirely due to original sin, but was rather prompted by physiological necessity. They live in fair comfort on moderate protein and little or no carbohydrate, as long as the fat is kept suitably low. They behave much more rationally toward simple hunger for all classes of foods than they did toward the former excessive craving for carbohydrate. In considering the influence of fat on carbohydrate utilization, on hyperglycemia and glycosuria, he mentions that one incidental observation is that the blood sugar is not an infallible criterion for prognosis. It may be within normal limits, both before and after meals, on a diet which nevertheless is destined to make trouble later. Also a very high level of blood-sugar may persist for a considerable time after wiser treatment has changed the direction of progress, so that hyperglycemia does not of itself demonstrate a breaking strain of assimilation or preclude improvement. A more broadly important lesson is that the age-long search of chemists for a magic food which diabetics shall assimilate perfectly is as vain as earlier quests of the holy grail or the fountain of youth or the philosopher's stone. What the diabetic organism is unable to assimilate without restriction is not any particular kind of food, but food as such. The most important fact shown by this series of experiments is that the appearance of spontaneous downward progress observed in human patients can be exactly imitated in dogs. Restriction of single foods, as carbohydrate or protein, suppresses symptoms temporarily, but lightening the total load upon the weakened assimilative function is the only present means by which it may be hoped actually to halt the diabetic process.

Pneumonia: *American Medicine* for February quotes Silbergleit (*Berliner Klin. Woch.*) as detailing an experience of more than a year in the treatment of pneumonia with the preparation optochin. He made accurate comparisons with simultaneous cases of other practitioners, which he used in arriving at conclusions concerning the therapeutic value of this, one of the newer remedies. Both groups of cases were treated in the same way with the exception that one received optochin, the others ordinary treatment as given by progressive clinicians. His conclusions were that this agent did not shorten the course of the disease, did not control the fever promptly, did not influence mortality or reduce the number or severity of the complications. The only appreciable benefit noted was in its mild antipyretic action and in causing some feeling of well-being and personal comfort—euthanasia. Its use did not obviate the necessity for cardiac stimulants. Its beneficial effects were relatively slight when compared to its possible unfavorable action in causing disturbances of hearing and vision..

Pneumonia: In the March number of the *Therapeutic Gazette*, H. A. Hare, in a clinical lecture on croupous pneumonia in a young man of about twenty-three, impresses these points: First, not to mistake the exaggerated breathing on the normal side for sounds indicating disease on that side. Second, that failure to find the ordinary bronchial breathing, or to find the subspitant rales, does not justify one in excluding pneumonia, for where there is severe consolidation these sounds may not be present. In other words, the absence of normal physical signs may be quite as indicative of disease as the presence of the abnormal ones which one naturally expects substituted for the normal sounds. As to treatment, he impresses the fact that before administering any remedies one should exercise the greatest care in determining that the patient really needs medicinal treatment. We are not to treat the pneumonia, we are to treat the patient. We cannot stop the pneumonia, or hurry it to its end. Nature helps the patient best in a large number of cases. If the first sound is distant and weak and the pulmonary second sound indicates some engorgement of the right side of the heart, one, two or three full doses of digitalis will often do great good. If there is evidence of venous turgescence, and the patient is full-blooded, plethoric, it may be wise in some cases to resort to bleeding. If pneumonia develops in a patient suffering from chronic intestinal nephritis, whom you know has had for many months a very high blood pressure, and a tired heart, it may in certain instances be wise to administer not only digitalis, for the purpose of supporting the heart, but moderate and carefully watched doses of the nitrites, to lower the pressure slightly, thereby relieving the heart of some of its burdens. As, however, a low pressure is by many considered an evil omen, if it develops in the course of a pneumonia, care should be taken that great relaxation of the blood-vessels is not induced, and if the pulse speeds instead of being slowed by digitalis, so that it becomes nearly as rapid in number of beats per minute as the systolic pressure is represented in numbers of millimeters of mercury, nitroglycerin or other nitrites should be stopped at once, and in many instances it may be wise to use belladonna or atropine to raise the pressure and to establish circulatory equilibrium.

Senile Diabetes: M. W. Thewlis, in the *Medical Review of Reviews* for March, states that diabetes of the aged is entirely different from this disease in younger persons. What will cure a younger person will produce the opposite effect on the disease in an aged individual. Many of these conditions of senile glycosuria are transient, and are merely a part of the senile degeneration. In other cases we find confirmed diabetics, as evidenced by all of the minor symptoms of this affection. Diabetes of the aged is usually mild, but very difficult to overcome. Senile patients rarely develop acidosis. It is unusual for diabetes to cause any increase in blood pressure or affect the arteries. On the other hand, arteriosclerosis may bring on diabetes, especially by producing trouble with the arteries of the pancreas. Cardiac incompetency is a rare complication in the aged. As to treatment, it is well not to tell an aged patient that he has sugar in the urine, unless one is obliged to. There is nothing that causes any more anxiety and dread in these senile cases than diabetes. The thought of a strict diet, the recollections of their friends who have suffered with the disease, is almost equivalent to calling their ailment by the familiar death-warrant, "old age." In the matter of diet much depends on the individual case. In some cases, however, it is bad judgment to change the mode of living. He concludes: (1) Diabetes in the aged differs from that in younger persons. (2) What will cure a diabetic in the young will sometimes produce bad results in the aged. (3) Many cases live longer and more comfortably if left untreated. (4) Many cases of diabetes are complicated by nephritis, and *vice versa*. (5) Urinalysis in aged patients is much neglected. (6) Term diabetes causes much anxiety to an aged person. To them it looks like cer-

tain death. (7) Dr. Joslin's and Dr. Allen's treatment give good results. (8) Treatment in most cases must be gradual, not vigorous. (9) Acidosis rarely develops in aged patients.

Chrysarobin: The *Medical Council* for March calls attention to the fact that some physicians fail to distinguish between chrysarobin and chrysophanic acid. They are not identical. Chrysarobin was long known as goa powder; it contains four bodies, but no chrysophanic acid, although it is converted partially into the acid by oxidation. Unna claims this oxidized product to be less irritating than chrysarobin itself. Chrysarobin belongs to the anthracene group, in which emodin and related compounds are responsible for the purgative effects. Aloes, senna, rhubarb, cascara and frangula belong to this group. Chrysophanic acid is contained in most of the anthracene group of drugs, and it acts therein as a purgative, but if the separated acid is given, it is very irritating and is absorbed too quickly to be effective as a purgative, passing out through the urine. Chrysarobin acts like the anthracene principles, it purges in doses from 1/10 to 1 grain, and its internal administration is no longer justified. As to external action, never apply chrysarobin to healthy skin; it is irritating, produces an ugly yellow stain, hard to remove even with chlorinated lime, and induces erythema, especially when applied on the face and scalp. Schamberg has proven that it is not an effective antiseptic, but it is a reducing agent. Further, it may be markedly toxic when applied to a considerable area, causing intoxication with renal irritation. It is also exceedingly irritating to the eyes. It has, however, well-defined uses, to which it should be strictly limited. Superficial parasitic skin diseases of vegetable origin, more especially *ring worm*, yield to it in many cases. It is only in superficial parasitic diseases in which its external use is effective, such parasitic diseases as actinomycosis and sporotrichosis involving tissues too deep to be influenced. But its chief value is in treating the chronic patches of psoriasis, and in some cases of chronic eczema and favus. Here the drug acts as a stimulant application. Never begin with a preparation exceeding 2 per cent in strength. The U. S. P. ointment is 6 per cent and is made with benzoinated lard, which increases its liability to absorption. The British Pharmacopoeia ointment (4 per cent in soft paraffin) is better. Two to ten per cent in solution of gutta-percha may be painted on with a stiff brush, especially in psoriasis.

NEW AND NONOFFICIAL REMEDIES

Tablets Sodium Chloride and Citrate—Squibb (Dr. Martin H. Fischer).—Each tablet contains sodium chloride 1 Gm. and sodium citrate 2 Gm. E. R. Squibb and Sons, New York.

Optochin.—Ethyl-hydrocupreine.—A synthetic alkaloid closely related to quinine. It has the anti-malarial and anesthetic action of quinine, but toxic symptoms, such as tinnitus, deafness, amblyopia or amaurosis (retinitis) are more liable to occur than with quinine. Investigations indicate that the drug may be of value in the treatment of lobar pneumonia, when its safe dosage has been determined. Reports indicate that the drug is of decided value in the treatment of pneumococcic infection of the eye (ulcus corneae serpens). Optochin is insoluble in water, but may be used in 1 to 2 per cent solution in a bland fatty oil, or as an ointment. Merck & Co., New York.

Optochin Hydrochloride.—Ethyl-hydrocupreine hydrochloride.—The hydrochloride of optochin (see above). It has the therapeutic properties of optochin, but is soluble in water. For application to the eye and instillation into the conjunctival sac a freshly prepared 1 to 2 per cent solution in water is used. Merck & Co., New York. (*Jour. A. M. A.*, March 3, 1917, p. 713).

During March the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Nonofficial Remedies:

Non-proprietary articles:

Ferric Cacodylate.

H. K. Mulford Company:

Iron Cacodylate Ampules, 0.03 Gm., Mulford.

E. R. Squibb & Sons:

Ampoules Iron Cacodylate, 0.03 Gm., Squibb.

The Academy of Medicine of Cleveland

ACADEMY MEETING

The one hundred and thirty-seventh regular meeting of the Academy of Medicine was held Friday, March 16, 1917, at the Cleveland Medical Library, the President, Dr. R. K. Updegraff, in the chair.

The minutes of the last meeting were read and approved. The minutes of the Council meeting of March 13th were read and approved.

Dr. Eisenberg was detained and Dr. A. G. Hyde kindly consented to read his paper, "Syphilis and Insanity," first.

Program:

1. The Relation of Syphilis to Mental Disease, by A. J. Hyde, M. D.

About 20 per cent of all cases of insanity can be attributed to a syphilitic infection; of these there are three fairly distinct types: (a) general paresis; (b) cerebrospinal syphilis; (c) syphilitic endarteritis of the cerebral vessels. Of the admissions at the Cleveland State Hospital during the past three years about 15 per cent are suffering from general paresis. These cases are carried through an intense routine anti-syphilitic treatment in spite of the hopelessness of the situation. The Wassermann reaction is positive in from 95 to 100 per cent of the cases on both blood and spinal fluid.

Obviously the great havoc produced by syphilis in these cases is due to the delay by the family physician in making the diagnosis in the earliest stages. The family, by their close association with the patient and by adapting themselves to his altered moods, fail to recognize the stealthy inroads of the disease. However, the physician is not justified in missing the causative factor for the physical signs, which, as a rule, precede the mental manifestations. The early signs are inequalities and irregularities in the pupils (80 per cent of cases), Argyle Robertson pupil, loss of consensual reaction of the eyes to light, increase or loss of tendon reflexes, speech defects, history of paralytic seizures, sensory disturbances and Romberg's sign. The general paretic is not necessarily exalted or grandiose in his mental state, as this is usually late in the disease. Any radical change from the moral and mental state in an individual past middle life should indicate a thorough examination to exclude general paresis. Even slight memory defects, inability to fix the attention, mild euphoria, mistakes in calculating, eccentricities in conduct, slovenliness of habit, etc., are very suggestive. In all suspected cases a check should be made by a complement fixation test on both blood and spinal fluid.

Cerebrospinal syphilis is numerically of less importance in insanity, as the disturbances are usually more of a physical than mental character, such as blindness, deafness, paralysis of special muscle groups, etc.

Cerebral syphilitic endarteritis causes partial or complete starvation of those parts of the brain whose blood supply is cut off by the diminished caliber of the nutritive vessels. Aside from the above, syphilis undoubtedly

influences in a profound way many of the mental disturbances not as yet understood. The two methods of combating the evil are prevention and treatment. The former would be aided greatly by education, calling the disease at all times by its real name, "syphilis," making every case notifiable by law and preventing marriage and a public occupation until the infective stage is past. Lectures, pamphlets and health bulletins regarding the dangers of syphilis should be put before the public.

(Dr. Hyde's paper appears in full in this issue.)

Discussion:

Dr. Laffer:

A positive Wassermann reaction in a patient with mental disturbance does not of necessity mean paresis. The futility of treatment is evident when one remembers that the spirochete is buried deep within the brain substance.

Dr. Hyde:

Thirty-five to thirty-six per cent of all patients admitted to the Cleveland State Hospital are active syphilitics. Tests on the wives of 100 paretics showed 15 per cent with active syphilis, 40 per cent were never pregnant, and 20 to 30 per cent with a history of miscarriages or still-born children.

2. The Value of the Wassermann Reaction in the Diagnosis of Syphilis, by A. A. Eisenberg, M. D.

The basic principle of the Wassermann reaction were presented by Dr. Eisenberg in a clear and concise manner. He discussed the character of the antigen and the search for one specific for syphilis. Luetin, when used as an antigen, has failed to give a positive reaction in 40 per cent of known syphilitic sera. The essential reactive substances in the antigen are the lipoids. Hence the Wassermann test is not a specific biological reaction, but the interaction between lipoids and the lipotrophic substances in the blood of syphilitics.

The varied conditions which affect these lipoids are fully known. However, recent injection of alcohol by mouth, or inhalation of chloroform or ether, causes a profound change in the complement fixation, often giving a false reaction. Infected serum will give false results, causing hemolysis where the reading should be positive. By repeated tests it has been found that there is a daily variation in the sera ofluetics, often changing from positive to negative on successive days.

Hence a single Wassermann is valueless unless checked up carefully by clinical findings. A patient may have a positive Wassermann and still be free from syphilis. There is a great need of closer co-operation between the physician and the laboratory, for after all is said and done, the serologist does not diagnose syphilis but makes readings of positive or negative reactions.

Discussion:

Dr. Hoover:

There is no pathognomonic sign for any disease. A positive Wassermann reaction is evidence, but not a test for syphilis. This reaction has exerted more influence in the diagnosis of syphilis than the lymphocytic increase in the spinal fluid. However, the latter is much more important evidence for the presence of syphilis.

3. The Value of Salvarsan and Other Arsenical Preparations in Syphilis, by Frank Oakley, M. D.

Salvarsan was introduced seven years ago by Professor Ehrlich. At first it was regarded as very toxic but able to effect a complete cure in one or two injections. Slowly we began to realize that four to six doses were

necessary and these were supplemented by courses in mercury. Now we find that there is no limit to the number of salvarsan injections necessary and that mercury is the mainstay. Neosalvarsan is only about 75 per cent as effective as salvarsan.

The treatment advocated is six injections of salvarsan 0.4 gms. at weekly intervals, together with a daily or weekly injection of mercury up to twenty. A vacation then is given for a few weeks, after which the process is repeated until a lasting negative Wassermann results. As many as 42 injections of mercury have been given without a negative Wassermann reaction resulting. However, the less mercury used the more likely a positive complement fixation test will result. Active syphilis is wonderfully improved by the use of salvarsan, but the effect is only temporary.

In paresis the use of salvarsan is valueless either intravenously or intraspinaly. In tabes it is useless unless the blood Wassermann is positive, and then it has no effect upon the tabetic signs. The use of the intraspinal treatment in tabes is still "sub-judice." The use of salvarsan is of permanent value only if followed by active and intensive mercurial treatment.

4. Mercury in Syphilis, by C. F. Hoover, M. D.

The treatment of syphilis has been studied by the great clinicians and experimenters for many years; nevertheless, the progress towards a complete cure has been extremely slow. The fault has been mainly in the lack of a real method of control. The Wassermann reaction has been to a great extent a failure; even a cytological examination of the spinal fluid does not always indicate the true state of affairs. After several years of trial we now realize that mercury is the only specific drug in the treatment of syphilis. The arsenical preparations, on the other hand, are merely an adjunct to the use of mercury and are recommended largely for the clearing up of dermatological manifestations.

Doctor Wharton, of Ann Arbor, has studied the presence of spirochetes in the viscera post mortem and has found that organisms are much more abundant in those syphilitics whose treatment was largely confined to salvarsan. Hence the use of mercury is a most essential therapeutic agent.

The only guide to the tolerance to mercury is salivation, and that depends largely on the method of administration and the treatment of the gums. The occurrence of diarrhoea is no indication of saturation. The three methods of administration are oral, intramuscular, and inunction. We do an injustice to the patient if we insist that mercury can be given only by injection. At Lakeside we instruct the patient in the technique of the inunction as follows: (1) Skin is washed carefully with ether to remove the oil of the skin; (2) apply alcohol in the same manner; (3) 30 gms. of unguentum hydrargyrum are rubbed in with a gentle rotatory motion to avoid a cutaneous hyperaemia; (4) bichloride of mercury varying from 1/20 to 1/4 gr. t. i. d. by mouth; (5) the teeth are cleaned after each meal with a good tooth paste, followed by dental floss and 1-4 solution of hydrogen peroxide.

Inunctions are given for six successive days, with a hot bath on the seventh—repeating this course until the patient is salivated. Salivation usually occurs after three to four weeks of treatment; a vacation is then given for about two months. This intensive treatment, together with absolute quiet, is repeated over a period of two years, after which time the patient must take one month out of every year for saturation as long as he lives.

Discussion:

Dr. Cole:

Salvarsan is the greatest discovery in the last 100 years in the treatment of syphilis and is a most efficient drug to clear up gummata, cutaneous manifestations and the specific lesions of the nose and throat. It does more in three days towards clearing up the early syphilitic lesions than mercury does in two weeks.

CLINICAL AND PATHOLOGICAL SECTION

The one hundred and twenty-third regular meeting of the Clinical and Pathological Section of the Academy of Medicine was held in conjunction with the Lakeside Hospital Medical Society, Friday evening, March 2, 1917, at Lakeside Hospital.

Program:

1. An Interesting Nerve Lesion, by L. B. Sherry, M. D.

Three years previous to entrance to the hospital, child received a cut over the right buttock; the wound was sutured at that time and recovered promptly. At present the entire right limb is atrophic and paretic, the sensations apparently are preserved. The entire limb likewise is much smaller than the left. At first the condition was thought to be an infantile paralysis, but as the scar of the old injury was over the region of the sciatic nerve, the possibility of a severed nerve was considered. Operation revealed the sciatic nerve cut through two-thirds the diameter, the cut ends presenting as rounded eschars. The nerve was sutured and the nerve sheath placed over it. The leg was put up in a cast with hyperextension of the thigh and flexion of the knee.

2. A Group of Interesting Cases, by C. E. Briggs, M. D.

(1) Spontaneous dislocation of the hip joint in conjunction with an infection is very rare, especially with pneumococcus infection. About fifty cases were reported associated with typhoid. This woman had several attacks of acute articular rheumatism; after her last attack she had some ankylosis and shortening. She consulted an osteopath, who diagnosed a dislocation, without taking an X-ray picture. He manipulated under ether anesthesia and applied a cast. One week later the cast was removed and another applied. Shortly after the thigh began to swell and she was sent to the hospital. On entrance she had a very large swelling in the region of the left hip joint, and there was external rotation of the thigh. X-ray showed some destruction of the acetabulum and head of the femur with a dislocation. The swelling was incised and a large amount of pus drained out, which contained pneumococci. The dislocation was reduced and a cast applied. At present there is some motion in the hip joint.

(2) This patient had an attack of mumps seven weeks ago, following which his left testicle became involved. Three weeks later the glands in both groins became enlarged and have remained so for four weeks. The glands are discrete, not movable, and in one area there is a slight amount of fluctuation. The condition is not unlike a gonococcus adenitis.

Dr. Briggs then demonstrated an X-ray plate showing calcification of the ligamentum patellae, and one of an unusual mushroom-like exostosis on the lower end of the right femur, which at operation proved to be a cyst.

3. Presentation of a Case of Gas Gangrene, by Allen Graham, M. D.

Patient, 35 years of age, was struck by an automobile and received severe injury of his left arm. There was a compound fracture of the ulna with much laceration of the soft tissues and crepitation of the arm and forearm. In view of the crepitation multiple incisions were made and the wound cleaned out with iodine and hypochlorous acid. Cultures showed the *B. refringens*. We first treated the arm with hypochlorous acid irrigations, then with wet dressings of hypochlorous acid, together with the electric light. The best results were obtained with the wet dressings and the electric light. As the wound cleared up the ulna was wired. The wires will be removed before the wound heals up entirely.

4. Discussion of Surgical Problems, by G. W. Crile, M. D.

Operations on the stomach are not always easy, since the patient may go along nicely, when suddenly he will begin to vomit. The vomiting is most

probably due to the fact that the powerful contractures of the stomach invaginated a loop of gut into the gastro-enterostomy opening. To prevent such conditions we make a wider hiatus in the mesocolon so that the two limbs of the anastomosis cannot be pulled through.

Cases of duodenal ulcer improve very much shortly after their operation, but may have discomfort after leaving the hospital. This is most likely due to the neglect of proper diet. We therefore advise and insist that these patients live on a restricted diet for at least one year.

With gastric carcinoma we do a two-stage operation. At the second operation we drain through Morrison's pouch to avoid late infections. After cholecystectomies we get a slight daily elevation of temperature, which is most probably due to an accumulation of pus in Morrison's pouch. By instituting proper drainage at the operation we avoid these difficulties.

Exophthalmic goitre patients are always on the verge of acidosis. We found that an operation under general anesthesia is contra-indicated, and that nitrous oxide analgesia is the safest and most beneficial method. We perform ligations and lobectomies in the patient's room to avoid all worry and anxiety.

5. A Case of Melano Sarcoma, by F. S. Gibson, M. D.

Patient, 56 years of age, came into the hospital complaining of weakness and loss of weight. Three years previous to entry he had been in the hospital for the removal of his left eye. Pathological examination shows a melano sarcoma. Six weeks ago he began to notice that he was losing in weight and had loss of appetite; he likewise noticed small lumps appearing in the skin of his abdomen. Physical examination reveals an enlarged liver that is hard and nodular. In the skin of the abdomen, chest and back there are many nodules of varying size, which are not attached to the underlying tissues. Most of these nodules have a peculiar bluish hue. Tests for melanin, tyrosin, and leucin in the urine are all negative. The urinary sediment contains many cells larger than leucocytes, which are heavily pigmented. X-ray examinations of the mediastinal region and all the long bones are all negative.

Discussion:

Dr. M. A. Blankenhorn:

Since the patient has a fairly marked involvement of his liver, we have tried to find some impairment of the liver function. He is not icteric and the tests for biliary elements in the plasma and urine are all negative. The pigment metabolism is normal, clotting time and fibrinogen not diminished. The nitrogen partition is not diminished. From a laboratory standpoint we can find nothing to suspect any disease of the liver.

6. Presentation of a Case of Hodgkin's Disease and Lymphosarcoma, by J. P. Tucker, M. D.

These two cases present about the same clinical picture. They both have generalized glandular enlargement. There is an involvement of the mediastinum in both instances. The blood picture is likewise about the same.

Lymphosarcoma: RBC., 5,650,000. WBC., 12,000. HB., 85%.

Differential (500 cells): PMN., 60%. Eosin, 0.6%. Baso., 0. Sm. Lymphocytes, 14%.

Large Lymphocytes, 10.4%. Large Monos., 4%. Transitionals, 11%. Platelets are greatly increased.

Hodgkins: RBC., 5,280,000. WBC., 21,000. HB., 70%.

Differential (500 cells): PMN., 78.4%. Eosin., 1.4%. Small Lymphocytes 4%.

Large Lymphocytes, 6.6%. Transitionals, 8.4%. Platelets are increased.

From the blood picture one would readily diagnose a Hodgkin's disease at once. Histologically the gland in the one case shows a definite picture of

a lymphosarcoma. A gland was not excised in the other case, which has besides his glandular enlargement a marked involvement of his skin. The patient with lymphosarcoma has no fever, whereas the one with Hodgkin's has a fever of 102 degrees with a daily remission of one degree.

Discussion:

Dr. C. D. Christie:

These two cases are practically symmetrical; both have general adenopathy; one has periadenitis, the other not. The one has fever, the other not. They both show the hopelessness of trying to differentiate a lymphosarcoma from a Hodgkin's disease. The blood picture in Hodgkin's disease is not typical. The blood picture of lymphosarcoma is quite typical of that found in early Hodgkin's. In the late Hodgkin's, however, the picture is more typical. There is a complete disappearance of all the cells except the transitionals and polymorphonuclears. Blood platelets likewise disappear. All cells that are derived from bone marrow contain oxidase granules; those from lymph glands do not. The transitional cells in both these cases showed the oxidase reaction and go to prove their origin in the bone marrow.

Discussion:

Dr. H. N. Cole:

This case of Hodgkin's has a very interesting skin lesion accompanied by marked pruritus. I have five cases thus far which show a skin involvement. The histological picture in the skin is the same as in the glands. In twelve per cent of the cases the skin lesion comes on about one to one and one-half years before any other symptoms appear. The skin condition may begin with an urticaria or areas of spotted pigmentation.

7. Rheumatic Myositis (Presentation of a Case), by M. A. Blankenhorn, M. D.

This patient came in about a week ago with an acute articular rheumatism. He was made toxic on salicylates twice and recovered from his acute joint affection. Two days ago he complained of pain in his back. On examination of the muscles of the back, there is a point of exquisite tenderness about 2 c.m. below the last rib on the left side. When the muscle is stretched the patient complains of severe pain, whereas voluntary motion is not as painful. This production of pain when the muscle is stretched, and no pain on voluntary activation is quite characteristic in cases of rheumatic myositis. Within the past year we have had several cases of rheumatic myositis which showed the same signs, except that the trapezii were more commonly involved.

8. Experimental Study of the Luetin Reaction, by H. V. Paryzek, M. D.

When luetin was first introduced there were many observers who reported positive reactions in non-syphilitics. Lately several men have found that the administration of potassium iodide produced positive reactions in normal individuals. Patients who were non-syphilitic were used in these experiments. A control luetin was first tried as well as a Wassermann reaction and in some instances a spinal puncture was done. If all these preliminary tests were negative, the patient received potassium iodide for a few days, after which another luetin test was done. Besides using potassium iodide, we employed allied ions, *e. g.*, pot. nitrate, pot. bromide, sod. bromide, sod. iodide and calcium bromide. Several organic iodine preparations were also used, such as siomin, sajodin and iodalbumin.

Out of 51 experiments 36 showed a strongly positive reaction after the administration of any of these drugs. There were also 12 faintly positive reactions, and three negative.

If such a large number of positive reactions can be produced in non-syphilitic individuals by the administration of a varied number of drugs, a conclusion as to the inefficiency of the luetin as a test for syphilis is justifiable.

Discussion:

Dr. H. N. Cole:

I can but corroborate the conclusion that the luetin reaction is of no value whatever in the diagnosis of syphilis. Many men have made this same observation, and our observations together with theirs will render all arguments against the luetin reaction more convincing.

EXPERIMENTAL SECTION

The ninety-fourth regular meeting of the Experimental Medicine section of the Cleveland Academy of Medicine was held March 9, 1917, at the Cleveland Medical Library.

1. The Genesis and the Structure of the Membrana Tectoria of the Cochlear Duct, by O. Van der Stricht, M. D.

A study was made of the cochleae from pig embryos of 60 to 190 mm., from a new born dog and from the following adult animals—bat, dog, rat and mouse fixed and stained in various ways.

The anatomical substratum which forms the membrana tectoria is represented by the apices of the epithelial cells, lining the tympanic wall of the membranous duct of the cochlea at three different regions, termed by authors the crista spiralis, the greater ridge and the lesser ridge.

A slightly oblique tangential section at the surface of this columnar epithelium shows a mosaic consisting of polygonal fields, the apices of the cells containing the diplosome or two central corpuscles of the attraction sphere and of a system of lines heavily stained by iron haematoxylin, separating the polygons. These lines represent a superficial dense portion of the intercellular substance which has changed in chemical composition and closes the intercellular spaces; they are termed terminal bars, closing bars. They are much thicker at the surface of this anatomical substratum than between the apices of the epithelial cells of the neighboring epithelium, although a little thinner on the crista spiralis than on the two ridges.

At the surface of the crista spiralis the subjacent connective tissue proliferates between the epithelial cells and forms prominent parallel bands, the teeth of Huschke, between which the superficial cells are pressed and fused together in the form of sheets. It is a syncytium unexampled in other organs since the primitive mosaic, the apices of the epithelial cells, remains intact and even in the adult organ the connective tissue does not traverse it.

The membrana tectoria is formed at the surface of these three epithelial regions even before the sensorial hair cells appear on the lesser ridge and on the lateral part of the greater ridge. An oblique section tangential to the apices of the cells of these ridges shows not only the superficial mosaic but also small portions of the newly developed membrana tectoria. These portions consist of a kind of mosaic, an alveolar system, the clear spaces of which overlie the apices of the epithelial cells and consequently must be considered to be derived from them. Between these spaces exists the denser part of the membrana tectoria forming real walls which overlie and are in direct continuity with the subjacent bars; they are consequently developed by them.

The adult membrana tectoria consists of numerous cylinders or prisms separated by a homogeneous fluid. The clear content of the cylinders is produced by the surface of the epithelial cells, and their dense walls by the surrounding terminal bars.

The clear interprismatic fluid must be considered as an intercellular product directly formed by the terminal bars which split longitudinally and thus form the walls of two neighboring cylinders at the same time as they produce the interprismatic fluid.

2. The Formation and Structure of the Zona Pellucida in the Eggs of Turtle, by Alice Thing, M. A.

The zona pellucida, a cuticular membrane occurring, according to Waldeyer, around all vertebrate eggs, was examined in the ovarian eggs of the map turtle, the box turtle, the painted turtle and the speckled tortoise. In these eggs, varying in size from 0.65 mm. to 2.6 mm. approximately in diameter, the zona pellucida measured from 1 micron to 22 micra approximately. It is formed of three elements, (1) the fundamental substance filling up the spaces between (2) a system of canals, each of which encloses one of the (3) filamentous prolongations of the epithelial cells. The zona pellucida originates through the activity of the epithelial area, represented by one layer of cubical cells, the lateral surface of which are connected by long and short bridges. The intercellular spaces, at the level of the surface of these cells are closed by a special material, the terminal bars. The fundamental substance of the zona pellucida is developed as a cuticular element by the primitive terminal bars, that is, by a real special intercellular material, possessing the tendency to extend over the free surfaces of the epithelial cells themselves, and to contract connections there with a delicate network, which appears to be formed directly by the superficial cytoplasm of the epithelial cells, and is apparently able to give rise at its surface to a material similar to that resulting from the activity of the terminal bars. This superficial cuticular network gradually becomes thicker, and by the development of fresh cuticular material builds up the entire fundamental substance of the zona pellucida. The prolongations of the epithelial cells, at first short, traverse the zona pellucida and become longer as the latter increases in thickness. Enclosed in the canals the prolongations reach the surface of the yolk where each ends in a knob. The structure just described, of the zona pellucida presents a most favorable condition for the conveyance of nutritive material from the epithelial area in contact with the maternal capillaries to the yolk which is in a condition of active growth and extension.

3. The Nose of the Lemurs. Its Significance for Human Anatomy, by T. Wingate Todd, F. R. C. S.

The speaker stated that the objects of the investigation were the following:

1. Observations on the zoological relationships within the order primates.
2. Observations upon the formation of the paranasal sinuses.
3. The presentation of examples illustrating certain general propositions in evolution.

Primates were chosen because of their relation to the human, because of the effect of the arboreal existence upon the olfactory system and because of the further degeneration of this system in association with the growing auditory, visual and tactile complex.

Photographs of various lemurs were at first thrown on the screen to illustrate certain general features and the habits of the individual genera and species. Attention was drawn to the nocturnal or diurnal habit, to the development of the eyeball and the orbit, and to the nature of the food and the form of the teeth. As a rule the orbit of a nocturnal animal is quite characteristic, but not always so. The explanation was considered later.

Lateral views and median sagittal sections of the skulls of ten genera of Lemurs were then shown and the primitive and insectivora-like ethmoid complex discussed together with the first beginning in the Lemurs of the

sphenoidal and frontal sinuses. The spectre Lemur was shown to be an aberrant primitive type. The restriction of the olfactory system in Lemur and Propithecus was also dwelt upon and a somewhat different view from that usually accepted was introduced for Lichanotus. In Daubentonina, the aye aye, the condition of the skull suggests that the nocturnal habit in this animal is a secondary reversion and indeed is also the ethmoidal complex.

Whereas the sphenoidal sinus originates in a comparatively simple way as a result of the withdrawal of turbinate tissue from the area bounded above and behind by the sphenoid and Zuckerkandl's "Sammelleiste" below, the frontal sinus owes its origin not only to a similar relationship to the nasoturbinals, but also to the interaction of various forces acting on the skull at the root of the nose between the face and the cranium. These forces were discussed in general and the relation thereto of the orbit and the nocturnal and diurnal habit pointed out.

The relation through the naso-turbinate of the maxillary and frontal sinuses with the consequent direct communication between these, which sometimes occurs even in man, was dwelt upon, and also the ancient inheritance of the hiatus semilunaris.

Finally, it was emphasized that evolution is not an evenly progressive process, but may become stationary or even reversed, and there may be secondary series of progression, also that it is not advisable to argue by analogy upon end results alone, for these end results as in the case of the frontal and sphenoidal sinuses may have been brought about by different means.

COUNCIL MEETING

At a meeting of the Council of the Academy of Medicine held Tuesday, March 13, 1917, at the University Club, the following members were present: The President, Dr. Updegraff, in the chair; Drs. Bernstein, Birge, Bruner, Bunts, Follansbee, Klaus, Lenhart, Maschke, McDonald, Selzer, J. J. Thomas, J. E. Tuckerman, C. W. Eddy, and by invitation Dr. Eisenbrey.

The minutes of the last meeting were read and approved.

On motion the following were elected to active membership in the Academy:

H. L. Bard, Clinton H. Bell, Frank P. Charvat, Homer B. Corlett, Geo. M. Kinsey, Wm. G. Krauss, Paul G. Moore, Rudolph S. Reich, L. J. Smith, R. E. Stepfield, Arthur S. Timme, Eugene Warren, Wm. E. Wells.

On motion the following was elected to associate member:

J. E. Clivenbaum

The names of the following applicants were ordered published:

Reed W. Anderson, T. S. Keyser, E. F. Kieger, B. F. Lowery, Wm. B. Markus, J. E. McClelland, J. C. Simon, John M. Steel, Robt. W. Williams.

On motion Dr. John A. Shoemaker was received in transfer from the Iowa State Medical Society.

On motion the publication of the 1917 roster of the Academy of Medicine was authorized.

A committee consisting of Drs. Wm. E. Bruner, G. E. Follansbee and A. S. Maschke was appointed to report the names of twelve or more members who would be willing to serve as delegates or alternates at the Ohio State Medical Association's annual meeting in May.

Dr. J. J. Thomas reported the progress of the Committee on Public Health, stating that the final adjustment of the controversy as to who was responsible for determining the chlorine dosage had been settled by agreement between the waterworks and Health Department—the power now resting with the Health Department.

Dr. Thomas also stated that the new health and sanitary code did not materially change the present code as relating to the quarantine of disease.

Dr. Selzer stated that the Health Office by executive order had stopped the sale of Kopp's Baby Compound and Swamproot.

Dr. Eisenbrey reported for the special committee to which Dr. Bunts and he were appointed, that a canvass of all the physicians in Cuyahoga County should be made to ascertain their availability for services in the Army, Navy, or Red Cross. He presented for the committee a communication and questionnaire which he asked the Council to authorize the committee to issue. On motion the report of the committee was accepted, the committee continued and authorized to proceed with the questionnaire.

Dr. Follansbee then gave a brief summary of the activities of the State Legislature leading up to the defeat of Senate Bill 66.

The Secretary called the attention of the Council to the fact that there was being projected in Cleveland a Physicians' and Surgeons' Information Exchange, designed to provide telephone service similar to like exchanges operated in Los Angeles and San Francisco, and that if the Council wished to consider the matter, Mr. Secrist could be called to explain the nature of the service which they proposed to provide. The Council being willing, Mr. Secrist was called.

After explaining the purpose and method of operation of the exchange and answering such inquiries as occurred to members, he suggested the possibility of working out an arrangement between the exchange and the Academy which would be mutually beneficial, and suggested that the wishes of the membership of the Academy might be ascertained by a questionnaire. He then withdrew.

It was moved and carried that the Council proceed to the consideration of the suggestion.

On motion Drs. Bernstein, Lenhart and the Secretary were appointed a committee of three to draft an inquiry to be sent to each member of the Academy for an expression of their views on the desirability of the suggested arrangement.

LETTER OF CORRECTION

April 5, 1917.

To the Editor of *The Cleveland Medical Journal*:

In the abstract of my paper on "Fracture of the Spine Without Paralysis," appearing on page 130 of the February, 1917, issue, I am reported as saying: "The refinements of the methods of diagnosis have convinced us that neurasthenia, railroad back, etc., must be abandoned. A safe road to follow is to hold all cases of injury to the back as fracture until proved otherwise." This abstract, though taken down by the official abstractor for the *Journal*, was unfortunately not handed to me for revision or proof, and I am therefore quite wrongly quoted.

What I did hold in my paper was: "That the refinements of the methods of diagnosis have convinced us that many cases previously held to be neurasthenia, railroad back, etc., now prove to be fractures either of the bodies of the vertebra or of the lateral or spinous processes. A safe road to follow is to suspect all cases of injury to the back in which the symptoms are referred to other parts of the spine than that receiving the impact of the blow, or in which the symptoms persist for over a week, of being possible fractures, and should be submitted to careful X-ray examinations for proof."

WALTER G. STERN, M. D.

BOOK REVIEWS

The Essentials of Chemical Physiology. By W. D. Halliburton, M. D., LL. D., F. R. S., Fellow of the Royal College of Physicians, etc., London. Ninth edition, 300 pages. Longmans, Green & Co., London, 1916. Price, cloth, \$1.75 net.

This splendid presentation of the essentials of chemical physiology is so well arranged and the story so delightfully told that the volume scarcely seems like a text book. It cannot fail to insure the continued popularity of this English author. The subject matter has been brought up to the present and is most clearly outlined.

H. S. F.

The Medical Clinics of Chicago. January, 1917, Vol. II, No. 4. Published bi-monthly (six numbers a year). W. B. Saunders Company, Philadelphia and London. Price, per year, \$8.00.

The January number of the Medical Clinics of Chicago is well worth perusal. Concrete cases are proposed and discussed—thereby avoiding textbook pictures and bewildering statistics. This novel form of presentation of medical problems makes their acceptance more sure by the busy practitioner—who at the end of a strenuous day may try to keep up with the procession.

Among the prominent clinics of the January number may be mentioned the very practical discussions of visceroptosis by Drs. Williamson and Hamburger. It is interesting to note that hyperalimentation is effected by hourly feedings (Williamson) and by three full meals (Hamburger). Dr. Abt's discussion of infant feeding and the clinic of Dr. Case on barium diagnosis are noteworthy. This method of case presentation should be heartily appreciated.

H. S. F.

Physical Examination and Diagnostic Anatomy. By Charles B. Slade, Chief of Clinic in General Medicine and Instructor in Physical Diagnosis in the University and Bellevue Hospital Medical College, New York, 1907 to 1914. Second Edition, thoroughly revised. 150 pages. W. B. Saunders, Philadelphia and London, 1916.

The small volume is most excellent in its presentation of normal physical diagnosis. It is a volume which can be recommended to sophomore classes in physical diagnosis—if there is a desire for a printed volume. The subject matter is well arranged.

H. S. F.

Medicine and Surgery I, No. 1, 1917. Philip Skrainka, M. D., Editor-in-Chief.

With the March issue, Medicine and Surgery, edited by Philip Skrainka, M. D., makes its initial bow to the medical public. The personnel of its list of associate editors and the quality of the articles in this its first issue compels a serious attention which even the peculiarities of the "Announcement" and "Why Should You Read Medicine and Surgery?", (Reasons V and VI), fail to dispel. It is questionable whether the cause of "high" medical journalism is promoted by the publication of such editorial complacency. Otherwise the reviewer has only words of praise.

Several names well and favorably known in surgical and medical literature appear in the list of contributors to the first number, and it is a pleasure to attest the fact that the articles are quite up to the standards of literary merit, interest and high order of scientific and educative value claimed by the Editor. The predominating note is surgical. Of the twenty-one articles published ten belong distinctly to the realms of Surgery and

two others are Orthopedic in character. The remaining articles deal with Medical, Ophthalmological and Roentgenological subjects, Medical History, Medical "Preparedness," Radio-Therapy and "Little Classics." Truly a wide selection of interesting reading. The Book Reviews are of the customary type.

In point of "make up," press work and illustrations the periodical is decidedly attractive and we anticipate with pleasure future issues

A. B. E.

ACKNOWLEDGMENTS

Handbook of Suggestive Therapeutics, Applied Hypnotism, Psychic Science. A Manual of Practical Psychotherapy, Designed Especially for the Practitioner of Medicine, Surgery and Dentistry. By Henry S. Munro, M. D., Omaha, Nebraska. Fourth Edition, Revised and Enlarged. C. V. Mosby Company, St. Louis, Mo., 1916. Price \$5.00.

Practical Urinalyses. By B. G. R. Williams, M. D. Director Wabash Valley Research Laboratory, Author of "Laboratory Methods," etc. Illustrated. C. V. Mosby Company, St. Louis, Mo., 1916. Price \$1.25.

Clinical and Laboratory Technic. By H. L. McNeil, A. B., M. D., Adjunct Professor of Medicine and Instructor in Physical Diagnosis, University of Texas Medical School, Galveston, Texas. Illustrated. C. V. Mosby Company, St. Louis, Mo., 1916. Price \$1.00.

Cataract, Senile, Traumatic and Congenital. By W. A. Fisher, M. D., Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College. Published by Chicago Eye, Ear, Nose and Throat College, Chicago, 1916. Price \$1.50.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1916, with the Comments that have appeared in the Journal. Price 50c.

New and Nonofficial Remedies, 1917, containing descriptions of the Articles Which Have Been Accepted by the Council on Pharmacy and Chemistry of the American Medical Association Prior to Jan. 1, 1917. American Medical Association, Chicago, 1917. Price \$1.00.

Anatomical Names Especially the Basle Nomina Anatomica ("BNA"). By Albert Chauncey Eycleshymer, B. S., Ph. D., M. D., Head of Department of Anatomy, University of Illinois. Assisted by Daniel Martin Schoemaker, B. S., M. D., Professor of Anatomy, St. Louis University. With Biographical Sketches by Roy Lee Moodie, A. B., Ph. D., Assistant Professor of Anatomy, University of Illinois. William Wood & Company, New York, 1917. Price \$4.50.

Food and the Principles of Dietetics. By Robert Hutchison, M. D., Edin., F. R. C. P., Physician to the London Hospital. Physician with charge of Out-Patients to the Hospital for Sick Children, Great Ormond Street. Author of "Lectures on Diseases of Children," "Patent Foods and Patent Medicines," "Applied Physiology" Joint Author of "Clinical Methods." With Plates and Diagrams. Fourth Edition. William Wood and Company, New York, 1917. Price \$4.00.

Medicine and Surgery (New Medical and Surgical Monthly). Vol. 1. No. 1. March, 1917. Philip Skrainka, M. D., Editor-in-Chief. Medicine and Surgery Publishing Company, St. Louis, Mo. Price \$3.00 a year.

INFORMATION REGARDING THE CORRELATED ACTIVITIES OF THE COUNCIL OF NATIONAL DEFENSE AND THE ADVISORY COMMISSION, THE MEDICAL DEPARTMENTS OF GOVERNMENT AND THE COMMITTEE OF AMERICAN PHYSICIANS FOR MEDICAL PREPAREDNESS

Medical Preparedness

Under existing conditions it is desirable that every physician as well as every other loyal citizen of America should be *prepared to render active service* to the Federal Government, remembering that the protection afforded by the Government has made it possible for its citizens to enjoy liberty, peace and prosperity.

The avenues through which the most effective service can be rendered by members of the medical profession have taken definite and concrete form. Briefly, the plan is that *all medical activities should co-operate with the Council of National Defense.*

It would seem desirable at this time to state explicitly just what the Council of National Defense and its various agencies are.

The Council of National Defense was created by Act of Congress, August 29th, 1916:

"Sec. 2. That a Council of National Defense is hereby established, for the co-ordination of industries and resources for the national security and welfare, to consist of the Secretary of War, the Secretary of the Navy, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, and the Secretary of Labor.

"That the Council of National Defense shall nominate to the President, and the President shall appoint, an advisory commission, consisting of not more than seven persons, each of whom shall have special knowledge of some industry, public utility, or the development of some natural resource, or be otherwise specially qualified, in the opinion of the Council, for the performance of the duties hereinafter provided. * * *

"That the Council of National Defense shall adopt rules and regulations for the conduct of its work, which rules and regulations shall be subject to the approval of the President, and shall provide for the work of the advisory commission to the end that the special knowledge of such commission may be developed by suitable investigation, research, and inquiry and made available in conference and report for the use of the Council; and the Council may organize subordinate bodies for its assistance in special investigations, either by the employment of experts or by the creation of committees of specially qualified persons to serve without compensation, but to direct the investigations of experts so employed."

A committee of distinguished physicians was asked to present to the President names of medical men suitable for membership on the advisory commission. Dr. Franklin H. Martin, of Chicago, was selected.

The following statement was issued by President Wilson on the night of October 11, 1916, in announcing his appointment of the civilian, advisory members of the Council of National Defense:

"The Council of National Defense has been created because the Congress has realized that the country is best prepared for war when thoroughly prepared for peace. From an economic point of view there is now very little difference between the machinery required for commercial efficiency and that required for military purposes.

"In both cases the whole industrial mechanism must be organized in the most effective way. Upon this conception of the national welfare the

Council is organized in the words of the act for 'the creation of relations which will render possible in time of need the *immediate concentration and utilization of the resources of the nation.*'

"The organization of the Council likewise opens up a new and direct channel of communication and co-operation between business and scientific men and all departments of the government, and it is hoped that it will in addition become a rallying point for civic bodies working for the national defense. The Council's chief functions are:

"1. The co-ordination of all forms of *transportation* and the development of means of transportation to meet the military, industrial and commercial needs of the nation.

"2. The extension of the *industrial mobilization* work of the Committee on Industrial Preparedness of the Naval Consulting Board and complete information as to our present manufacturing and producing facilities adaptable to many-sided uses of modern warfare will be procured, analyzed and made use of.

"One of the objects of the Council will be to inform American manufacturers as to the part which they can and must play in national emergency. It is empowered to establish at once and maintain through subordinate bodies of specially qualified persons an auxiliary organization composed of men of the best creative and administrative capacity, capable of mobilizing to the utmost the resources of the country.

"The personnel of the Council's advisory members, appointed without regard to party, marks the entrance of the non-partisan engineer and professional man into American governmental affairs on a wider scale than ever before. It is responsive to the increased demand for and need of business organization in public matters and for the presence there of the best specialists in their respective fields. In the present instance the time of some of the members of the Advisory Board could not be purchased. They serve the government without remuneration, efficiency being their sole object and Americanism their only motive."

As indicated above, the Council of National Defense therefore consists of six members of the Cabinet, as follows:

The Secretary of War, Chairman.

The Secretary of the Navy.

The Secretary of the Interior.

The Secretary of Agriculture.

The Secretary of Commerce.

The Secretary of Labor.

The Advisory Commission of the Council of National Defense consists of seven civilians appointed by the President. The members of the Advisory Commission are as follows:

Mr. Daniel Willard, President of the Baltimore & Ohio Railroad, Chairman.

Mr. Hollis Godfrey, LL.D., President of Drexel Institute, Philadelphia, Pa.

Mr. Howard E. Coffin, of Detroit (who is also Chairman of the Committee on Industrial Preparedness of the Naval Consulting Board).

Dr. Franklin H. Martin, of Chicago.

Mr. Bernard Baruch, financier, of New York.

Mr. Julius Rosenwald, Vice-President of Sears, Roebuck & Company, of Chicago.

Mr. Samuel Gompers, President of the Federation of Labor.

The two bodies meet in joint session at frequent intervals for the purpose of considering problems relating to national defense.

The executive activities of the Council of National Defense are co-ordinated and carried out through the medium of the Director of the Council of National Defense, Mr. W. S. Gifford, and the chiefs of the various departments represented by the members of the Advisory Commission. Dr. Frank F. Simpson is chief of the Medical Section of the Council of National Defense.

The Advisory Commission

The organization of the Council and of the Advisory Commission provides that each member of the Advisory Commission shall gather about himself for the most effective co-ordination of the activities he represents, a committee or board consisting of representatives of governmental departments on the one hand, and civilian members on the other hand.

The Medical Committee, of which Dr. Franklin H. Martin is Chairman, consists of:

Wm. C. Gorgas, Surgeon General of the U. S. Army.

Wm. C. Braisted, Surgeon General of the U. S. Navy.

Rupert Blue, Surgeon General of the U. S. Public Health Service.

Col. Jefferson R. Kean, Director General of Military Relief of the American Red Cross.

Dr. Wm. H. Welch, member of the National Council of Research.

Dr. Wm. J. Mayo, Chairman of the Committee of American Physicians for Medical Preparedness.

Dr. Frank F. Simpson, Chief of the Medical Section of the Council of National Defense, and Secretary of the Committee of American Physicians for Medical Preparedness.

Many medical problems which have bearing upon the national defense are considered by Dr. Martin's committee and by the Advisory Commission and the Council of National Defense before being put into action by the governmental departments concerned.

Committee of American Physicians for Medical Preparedness—Its Component Parts

National and State Committees

In April, 1916 the national committee was appointed by the joint action of the presidents of the American Medical Association, the American Surgical Association, the Congress of American Physicians and Surgeons, The Clinical Congress of Surgeons of North America, and the American College of Surgeons. To that committee was delegated the responsible duty of formulating plans whereby the civilian medical resources of the United States might be ascertained and effectively co-ordinated for such purposes as might be required by the Federal Government.

The national committee organized, selected a chairman and secretary and an executive committee, and appointed a state committee of nine strong men in each state of the Union.

It is the fixed policy of this committee that all presidents and secretaries of the various medical societies shall be members of their respective state committees during their incumbency in office. From the first it was contemplated that at the proper time the organization of committees would be perfected in each county of the country. That time has now come and county committees are being rapidly organized.

In each instance the state committees are expected to select the county committees and to supervise their formation.

Name and Personnel of County Committees

It is the fixed policy of the Committee of American Physicians for Medical Preparedness that the various important medical interests and ac-

tivities of each county shall be represented on the county committees. This is done for the purpose of co-ordinating the important interests and activities so that the medical profession of the nation may present a compact and effective organization for the purpose of aiding effectively in the national defense. In order that this plan may be carried out with uniformity and precision throughout the country, the various state committees have been requested to have all county committees bear the following distinguishing name, to wit, The Auxiliary Medical Defense Committee of..... County, in.....State. The state committees have also been requested to provide that the county committees shall include the following in their list of members:

1. All members of National Committees of the Committee of American Physicians for Medical Preparedness, resident in the individual county.
2. Members of the State Committee resident in or near the individual county.
3. Representatives of the U. S. Army resident in the individual county.
4. Representatives of the U. S. Navy resident in the individual county.
5. Representatives of the U. S. Public Health Service resident in the individual county.
6. Representatives of the State Board of Medical Examiners residing in the individual county.
7. Representatives of the State or City Public Health Service.
8. Ranking medical officers of the National Guard.
9. President and Secretary of the local Medical Officers' Reserve Corps Association, if there should be such an organization.
10. Deans of medical schools.
11. President and Secretary of the County Medical Society.
12. President and Secretary of any other important medical societies.
13. Medical Director of the local Red Cross Units.
14. Other representative medical men.

Duties of County Committees

From time to time specific duties will be assigned to the various state and county committees. These duties will be in accord with the policy of the Council of National Defense, and should be executed promptly and precisely by those who are called upon to co-operate in this manner with the Council of National Defense.

The committees will call to their assistance those who have been appointed field aides by their various state committees and such other physicians as they may desire to have co-operate with them.

Among the specific duties which the county committees are requested to perform at this time are the following:

First: That these committees co-operate with the National and State Committees of the Committee of American Physicians for Medical Preparedness in their efforts to gain needful information regarding the civilian medical resources of their own communities, and in their efforts to co-ordinate civilian medical activities for prompt mobilization in case of need.

Second: That they secure applicants:

(a) For the Army Medical Corps. If the President should call the full complement of troops already authorized by Congress, the Regular Army would need about 1,200 additional medical officers. If a million men should be called, a corresponding increase would be required.

(b) For the Medical Officers' Reserve Corps. If war should come, 20,000 to 30,000 Medical Reserve officers should be enrolled.

(c) For the Naval Medical Corps, which needs about 350 additional officers.

(d) For the Coast Defense Reserve Corps of the Navy. Several hundred high-class reserve medical officers are desired.

(e) For the National Guard, such numbers as may be required to bring your local National Guard to full strength.

In the preparation for National Defense the first thing needed will be medical officers.

Physicians recommended for such service should be of the highest type. They should be free from suspicion of addiction to drugs or drink.

Medical Officers who go to field duty should by preference be under the age of forty-five.

Third: That they co-operate, individually and collectively, with the Medical Department of the Army, Navy and Public Health Service and with the Council of National Defense.

Fourth: That they co-operate with the Red Cross in their efforts to bring that organization to the highest point of efficiency.

Committee of American Physicians—Activities Accomplished and in Progress

On the 26th of April, 1916, the Executive Committee of American Physicians tendered the services of the committee to the President of the United States. He expressed himself as being pleased with the patriotic tender of services and regretted that existing laws did not permit the acceptance by the Federal Government of gratuitous services, but stated that the matter would be referred to the Secretary of War and the Secretary of the Navy for the purpose of devising plans by which the good offices of the medical profession could be accepted and utilized to best effect by the Federal Government. He further stated that the plans would be referred to the Committee of American Physicians for comments and suggestions. The Executive Committee was permitted to make suggestions regarding the bill creating the Council of National Defense.

During the last year this Committee and its various subsidiary bodies have been actively engaged in formulating and carrying out various activities in conformity with the general plans for national defense which have been undertaken by the Federal Government.

The splendid work done by the various state and other committees was of such extent and value that the Council of National Defense at its first meeting requested the Committee of American Physicians to continue their various activities under the guidance of the Council of National Defense, and asked the Secretary of the Committee of American Physicians to act as chief of the Medical Section of the Council of National Defense. Since that time the various activities have gone forward with renewed energy.

Some of the activities which have either been completed or are well under way, follow:

1st. Some 20,000 medical men selected from all parts of the country have been classified according to the training and the kinds of work which they do best.

2nd. An inventory of hospitals and other medical institutions is well under way.

3rd. It has been the fixed policy of the Committee of American Physicians to aid the American Red Cross in bringing its medical department to the highest point of efficiency. With that object in view, and in order to foster the spirit of co-operation, the members of the National Committee of the Committee of American Physicians accepted invitations to become members of the national committee of the medical department of the American Red Cross. In order further to promote the harmonious co-operation of the two organizations, most of the members of the various state committees

of the Committee of American Physicians were also made members of the state committees of the American Red Cross. The various county committees will also be expected to co-operate in carrying out the plans of the two organizations.

4th. The establishment of military training for senior medical students in a large percentage of the high grade medical schools of the country.

5th. The establishment of more effective military training for hospital groups for members of the Medical Officers' Reserve Corps, for dental students, and others.

6th. The appointment of a Committee for the Standardization of Medical and Surgical Supplies and Equipment. The purpose of this work is to designate a list of articles essential to the successful conduct of civilian and military medical and surgical activities so that in the event that it should become necessary to curtail production all of the energies of the drug and instrument makers would be devoted to necessary articles rather than to those which are desirable but not essential. On this Standardization Committee are representatives of the Army, the Navy, the Public Health Service, the Red Cross, the Council of National Defense and a number of the most distinguished members of the various specialties of civilian medicine. In their work of co-ordination and standardization this committee will take counsel with the manufacturers of the various supplies under consideration.

7th. Much valuable information supplied by medical and other observers who have worked in the war zones of Europe is being gathered and classified.

8th. The presidents of important national medical organizations of the country have been requested to suggest to the medical section of the Council of National Defense the kinds of work which members of those organizations are best fitted to perform, and to suggest plans whereby their activities and resources might be utilized to best advantage. This request does not contemplate an inventory and organization of these resources. The purpose is that having received suggestions offered by the various organizations, those suggestions will be maturely considered and such as conform to the plans of the Council of National Defense and can be utilized to advantage, will be adopted. The various organizations will, in that case, be requested to co-operate fully and promptly in perfecting the plans of the Council of National Defense.

The foregoing memorandum embodies only a very small percentage of the problems now under consideration. It is neither wise nor desirable, however, to present them in detail at this time.

In accordance with the above, the Auxiliary Medical Defense Committee of Cuyahoga County has been organized with the following members:

Cleveland Medical Committee for National Defense

(Auxiliary to the Council of National Defense—Medical Section)

Dr. F. E. Bunts, Chmn. Comm. Red Cross Medical Service of the State of Ohio, Member of State Medical Comm. for National Defense, Member the Comm. to Canvass Physicians of Cuyahoga Co. of the Acad. of Med. of Cleveland.

Dr. G. W. Crile, Member National Medical Comm. for National Defense, Member Auxiliary Comm. on Medical Red Cross Work of the Acad. of Med.

Dr. J. C. Darby, Major (ret.) M. C. 5th O. V. I.

Dr. J. T. Duhigg, Acting Assistant Surgeon U. S. N., Local Recruiting Surgeon, U. S. N.

Dr. A. B. Eisenbrey, Member Comm. to Canvass Physicians of Cuyahoga Co. of Acad. of Med. of Cleveland, Member Auxiliary Comm. on Medical Red Cross Work of the Acad. of Med.

- Maj. H. L. Gilchrist, M. C. U. S. Army. Medical Military Instructor at W. R. U.
Dr. C. A. Hamann, Dean of Med. School W. R. U.
Dr. H. T. Karsner, Sec'y Med. School W. R. U.
Dr. W. E. Lower, Chairman State Medical Comm. for National Defense.
Dr. R. K. Updegraff, President Academy of Medicine of Cleveland.
Dr. John M. Holt, Surgeon U. S. Public Health Service; Medical Officer in Charge of Marine Hospital.
Dr. Robert H. Bishop, Jr., Commissioner of Health, City of Cleveland.
Dr. J. E. Tuckerman, Secretary of the Academy of Medicine of Cleveland.
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MEDICAL NEWS

Lectures on Military Medicine and Sanitation.—The President and Board of Trustees and the Faculty of the School of Medicine of Western Reserve University invite the members of the medical profession to a series of eight lectures on "Military Medicine and Sanitation," to be given by Major Harry L. Gilchrist, Medical Corps, United States Army. The lectures will be given at the School of Medicine, East Ninth street and St. Clair avenue, on Tuesday at 4:30 P. M., beginning April 10, and will cover the following subjects:

The organization of the Sanitary Service, United States Army.

Military hygiene and sanitation.

The recruit, how obtained, clothed, fed, etc.

Camp sanitation, including the different methods of disposing of camp waste, etc.

The hygiene of mobile troops.

The water supply of an army.

Military medicine, including prophylaxis, methods of treatment, etc., of the principal diseases affecting the soldier.

If time permits, a discussion of military surgery.

These lectures will be profusely illustrated by lantern slides of pictures taken during the mobilization on the border and with General Pershing's column in Mexico.

The Surgeon General desires that all medical men interested in medical preparedness shall attend these lectures and that Major Gilchrist be consulted freely in regard to all matters relating to the sanitary service of the Army and the Medical Division of the Officers Reserve Corps.

Major Gilchrist is anxious to meet all interested physicians, especially those under thirty-two years of age, with a view to interesting them in joining the Medical Corps of the Army. Physicians under forty-five years of age are to be asked to join the Medical Section of the Officers' Reserve.

Fraudulent Proprietary Medicines.—The sale of Kilmer's "Swamp Root," "Varlex" and "Sargol" has been ordered discontinued in Cleveland since the inauguration of the City Bureau of Laboratories' crusade against fraudulent proprietary medicines and other misbranded preparations.

"Swamp Root" is largely a dilute alcohol-water solution of sugars and absolutely injurious in the case of kidney disease, which it professes to cure, according to the bureau's analysis. "Sargol" claimed to be a flesh builder. Letters notifying the company of the city's action were returned marked "fraudulent" by the post office department. "Varlex" was advertised as a

cure for the tobacco, drug and liquor habit. The bureau is busily engaged in gathering data and an embargo will shortly be placed on a number of other products.

Whooping Cough Change.—Whooping cough patients will be allowed to go out of doors under certain restrictions after the fever stage has passed, by the provisions of an amendment to the communicable disease ordinance to be submitted to the City Council shortly. The amendment will provide that the patient must not use cars or other public conveyances, that he must not enter homes, stores, schools or places of public assembly, and that he must wear upon the left arm of his coat, overcoat or other outer garment a warning card, or band, of a type approved by the Division of Health.

New Scientific Publication.—*The American Review of Tuberculosis*, a new monthly scientific publication for physicians and research workers in tuberculosis, made its first appearance in March. The new publication announces that its purpose will be to serve as a medium for the dissemination of reliable information with regard to the medical and other phases of the nature, treatment and prevention of tuberculosis and that it will aim to keep physicians and others interested in the scientific aspect of tuberculosis abreast of the best thought in this field. The National Association for the Study and Prevention of Tuberculosis is the publisher, Dr. Edward R. Baldwin, Saranac Lake, editor-in-chief, and Dr. Allen K. Krause, of Baltimore, managing editor.

Call Meeting of Physicians.—Health officials are planning to call a meeting of physicians of the city to discuss plans for combatting a possible outbreak of infantile paralysis here this summer. The meeting will probably be held prior to National Better Baby Week, which will be observed locally May 1-6.

National Association Meeting.—Plans for the annual meeting of the National Association for the Study and Prevention of Tuberculosis to be held in Cincinnati, May 9, 10 and 11, are rapidly nearing completion. The program gives promise of being one of the most important ever prepared by the organization. It will probably be many years before the opportunity is again offered Ohio workers to entertain the national society.

Mount Sinai Appointments.—The following have been appointed internes at Mount Sinai Hospital for the year 1917-18: Herbert A. Mahrer, Cleveland; L. A. Kustin, Ann Arbor; A. D. Shapiro, Chicago; J. H. Chatah, Ann Arbor; M. H. Hosmer, Baltimore; Spencer C. Grey, Chicago.

Dr. Applebaum has returned from a two weeks' vacation in Baltimore, Md.

Oscar B. Campbell, M. D., Western Reserve University College of Medicine, 1883; died at his home in Cleveland, March 2. Dr. Campbell was 70 years old. Since graduation he had been in continuous practice in Cleveland, during which time he was a member of the Board of Education for two years, a charter member of the Cleveland Medical Society and a member of the Cuyahoga County Medical Society. He was also a fellow of the American Medical Association. Dr. Campbell was president of the Cuyahoga Society at the time of its consolidation with the Cleveland Society to form the Academy of Medicine of Cleveland.

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A CONSIDERATION OF THE CLINICAL CLASSIFICATION OF CHRONIC NEPHRITIS*

BY HENRY A. CHRISTIAN, M. D.,

BOSTON

From the Medical Clinic of the Peter Bent Brigham Hospital, Boston.

Clinical classification of cases of nephritis has been attempted in the past mainly on the basis of the pathological anatomy of the kidney as seen at autopsy. This type of classification has been based on a study of the end result of the disease process. It is quite conceivable that two pathological processes very essentially different in their earlier courses as they advanced might become more and more similar until at death the lesions in the kidneys were indistinguishable. In fact, there is considerable evidence for the frequent existence of just such a happening. Under such conditions the end result could not be expected to be a satisfactory basis for a classification applicable during the clinical course of the disease in these two groups inasmuch as the clinical progress is likely to have been different since the pathological development was different almost until the time that the end result was reached. Then there has never been any very general agreement among pathologists as to classification. Even had there been we have seen that clinical application presents difficulties; without their agreement the problem seems pretty hopeless for the clinician if he attempts to harmonize clinical course with pathological classification.

*Read before the Hartford County Medical Society at Hartford, Conn., on April 3, 1917.

Etiological classification, however ideal it would be, must continue for some time to fail because so far our ignorance of causes of nephritis far outbalances our knowledge. In the larger number of our cases we fail to find a definite cause though there is a growing conviction that infection and infectious diseases are responsible for the beginnings of many cases. Curiously enough syphilis seems to play but a very minor causative part and alcohol even less, though in a chronic progressive lesion in the kidney you would expect them to be prominent factors from analogy with chronic cerebral and vascular lesions due to syphilis and chronic interstitial hepatitis from alcohol.

A classification satisfactory for clinical use must be based either on etiology or function; renal structure during the course of nephritis obviously can only be inferred from the character of renal function; it is but rarely possible to inspect renal structure during life because exploratory or curative surgery is not often practiced on the nephritic kidney.

Etiology would serve as a basis for classification if more frequently we knew the etiology in the given case and if cases of different etiology tended on the average to run different courses. In the few cases of determined etiology, so far as we know at present, this does not seem to be the case with any great frequency and so we must turn to function as a rather better understood factor in our problem to see how far we can go in classification on that basis.

By renal function we mean the ability of the kidney measured in various ways to carry on different forms of excretory work. The normal kidney excretes promptly the usual constituents of the urine as well as numerous foreign substances circulated to it. The diseased kidney does this work less well and by studying the way the diseased kidney works in contrast to the normal we should be able to measure the renal deficiency and in a functional way judge of the character of the renal lesion.

In the very beginning let me state that attempts to make before death any very accurate diagnosis of the probable type of finer lesion to be found in the kidney after death have failed so far. In this connection a bird's eye view of my own attitude toward diagnosis of types of nephritis during a ten-year period of considerable attention to the nephritis problem is of interest.

From 1900 to 1905 all of my time was devoted to pathology carrying on routine hospital pathological work, teaching, and con-

ducting some special studies. This work thoroughly familiarized me with the current views as to the pathology and finer histology of renal lesions. 1906 and 1907 were spent continuously in the hospital wards observing various types of disease as presented in a large general hospital and in teaching clinical medicine. Late in 1907 I began special studies of nephritis while conducting the ward work of a general medical service and these two things have occupied the bulk of my attention for the past ten years.

Looking back over my earlier work of this ten-year period, I find that my tendency was to attempt fairly frequently special diagnoses of types of chronic nephritis such as chronic interstitial nephritis, chronic glomerular nephritis and chronic parenchymatous nephritis and I regarded almost all cases with high blood pressure as being cases of chronic nephritis in which the high blood pressure was secondary to the renal lesion. In doing this I but reflected the views generally held and taught at that time; views gathered from text books, journals and personal experience, influenced to a considerable degree by my own pathological observations.

At the present time I feel less sure of these grounds. My diagnoses of chronic interstitial nephritis, chronic glomerular nephritis, etc., are less frequent; more often the diagnosis chronic nephritis is all I feel justified in making; to the diagnosis "chronic nephritis" is commonly added "with" or "without hypertension." The number of cases regarded as having a primary hypertension or at least one not caused by nephritis has increased very materially.

Why has this change taken place? Because applying methods of testing renal function I feel more confidence in my ability to include or exclude renal disease as an important factor in the patient's symptom complex and less confidence in my ability to foretell just what sort of a pathological lesion I will find if the patient dies and is autopsied. Observing my patients during life and studying their kidneys after death has brought home to me our inability to correlate function tested antemortem with kidney lesions observed post mortem. On the other hand in recent years much fewer mistakes have been made in diagnosing chronic nephritis where it did not exist and vice versa.

As it seems to me at present we can make better diagnoses of the presence or absence of renal lesions; we can determine more accurately the relative importance of the renal disturbance in the total symptom complex and we can form a better idea of prognosis

in cases of nephritis than formerly. This improvement has come largely from the application of tests of renal function.

A very considerable number of tests of renal function have been described. Of these a relatively few serve to give the needed information for diagnosis and prognosis. At the medical clinic of the Peter Bent Brigham Hospital we have found four to be especially useful:

1. The phenolsulphonephthalein elimination.
2. The determination of the urea nitrogen content of the blood and its rate of excretion as indicated by the McLean index of excretion.
3. The two-hour renal test, somewhat modified from the form originally described by Schlayer and Hedinger.
4. The amount of diuresis produced by a diuretic such as theocin.

Of these the 'phthalein test is very simple to carry out and is used so generally that it is needless to spend any time in describing it. We utilize it as first described by Geraghty and Rowntree. It gives valuable information as to renal function when renal function is considerably disturbed. It does not distinguish between decreased renal function due to chronic passive congestion and that due to nephritis.

The determination of the urea nitrogen of the blood and the index of excretion is more complicated and requires considerable laboratory training and equipment. Considerable increases in blood urea occur only with fairly marked renal lesions and more usually with nephritic lesions, though they are encountered in other conditions such as acute intestinal obstruction. Changes in the index of excretion are found with much less marked renal lesions and so are of use in indicating milder degrees of renal disturbance, while very low indices indicate marked disturbance. However, changes in the index do not always point to a nephritic lesion.

The two-hour test if the patient is on a fairly definite diet and attention is paid only to the amount and specific gravity of the urine in each specimen is one of the simplest of the tests. As we carry it out in the hospital it is more complicated, for we determine the sodium chloride and nitrogen content of each specimen which adds data of value. This test is particularly useful as indicating variations in function when the disturbance is slight. In more advanced

processes it gives evidence of there being marked disturbance, but does not serve to indicate variations in the degree of severity of the lesion. Here again this test may show marked disturbance in renal excretion from other causes than nephritis, for example, in severe anaemia. In a recent paper ("The Use of Tests of Renal Function in Nephritis," *Journal of Urology*, 1917), I have described this test in some detail and given a number of charts illustrating its variation in different cases.

The response to a diuretic is a test easy to carry out and is particularly useful in separating the cardiac from the renal element in cardio-renal cases.

As has been indicated above, none of these tests are pathognomonic of nephritis. The correct interpretation of the results of the tests will depend on a proper evaluation in relation to information obtained by other means of studying the patients.

From having applied these functional tests to a number of patients studied in the hospital, some with advanced, some with slight nephritis, others without nephritis and from having followed the course of the disease in a number of these patients over several years, certain conceptions of renal disease have been derived.

First of all it has become evident that the relations of a disturbance in renal function to the function of other body organs are complicated. Conversely the effect on renal function of disturbances in other tissues is an important one. The inter-relation between the cardio-vascular and the renal apparatus is the one apparently of most importance in a consideration of chronic nephritis. Any satisfactory clinical classification must take both of these into consideration.

I am inclined to think that we are helped most if we consider our cases of nephritis as part of a large group that might be termed a cardio-vascular-renal group in which cardiac insufficiency from myocardial weakness, hypertension and defective renal excretion play the prominent part. Any attempt to group the cases solely on the basis of renal disturbance fails to give a proper understanding of the disease as we see it in our patients.

In the grouping suggested above vascular lesions constitute the most useful central grouping. Vascular lesions may be, in so far as we can prove, only functional, that is, we see some cases in which we find hypertension and are unable to demonstrate organic lesion of the vascular apparatus. Usually there is evidence of thickening

or sclerosis of some type in the vessel, but these changes may be found without hypertension. Such vascular lesions, functional or organic, general or within the heart, frequently appear to be the cause of cardiac insufficiency which we can term myocarditis with hypertension or myocarditis with arteriosclerosis or myocarditis with both, as the case may be, using myocarditis here in the sense of myocardial insufficiency rather than in the sense of an interstitial inflammation and remembering that at autopsy such hearts may show little beyond hypertrophy and dilatation.

The same varieties of vascular lesion often are found associated with evidences of defective renal excretion so that we have nephritis with hypertension or nephritis with arteriosclerosis or nephritis with both as the case may be, using the term nephritis in the sense of a diffuse progressive degenerative or proliferative process involving any portion of the renal structure. The evidence is not so clear that these vascular lesions cause the renal insufficiency in the way that they cause the myocardial insufficiency. It seems probable that in some patients that this is true while in others the vascular and renal processes develop simultaneously from a common cause or the renal disturbance leads to the vascular changes.

If we study individual patients by means of methods of physical examination, blood pressure determination and tests of renal function, it seems quite evident that there are considerable numbers of patients with high blood pressure with and without evidences of organic vascular lesion in whom there is no evidence of cardiac insufficiency and in whom renal function is so nearly normal as measured by various tests that it seems impossible that nephritis could have caused the hypertension. These are cases with primary or essential or purely vascular hypertension; any of these terms may be used. If such cases are kept under observation usually signs of increasing myocardial insufficiency appear and these patients die the death of cardiac insufficiency—myocarditis with hypertension. Very often vascular organic lesions increase and many patients of this group die from cerebral hemorrhage, angina pectoris or other vascular accident—hypertension with arteriosclerosis.

As progression takes place usually there is an increasing evidence of renal insufficiency, but it is a striking fact that one sees very many of these patients with high blood-pressure and relatively little sign of renal disturbance, in contrast to the few that one sees in which progression takes place along renal lines and the patient

dies of uremia. There is a group of patients in whom progression takes place along both directions so that starting as hypertension cases they gradually become patients with myocardial insufficiency, vascular organic lesion and nephritis in whom death may be cardiac in type, from a vascular accident or from uremia with on the whole least probability of the last—patients with hypertension and both myocarditis and nephritis.

Finally there is a distinct group of patients in whom, whenever studied, renal insufficiency is the prominent feature. In some of these blood pressure is but little above normal; in others it is definitely high—cases of chronic nephritis with or without hypertension. In such patients cardiac insufficiency is a late appearance and often does not appear at all. These are patients essentially with nephritis in whom the renal lesion has been the primary and chief factor. These patients very commonly die a renal death though even with these as they are followed cardio-vascular disturbances may overshadow the renal.

In all of these groups of patients the presence or absence of oedema must be considered. In the entire group the oedema may be of two origins; circulatory or renal. Whether or not the former is found depends solely or in very great part on cardiac efficiency. The final cause of renal oedema is not known. We see patients with very evident renal insufficiency, who eventually die a renal death in whom oedema is very slight and we see other patients with just as evident renal disturbance without any signs of cardiac insufficiency in whom oedema is marked. We consider these last as cases in which the nephritis caused the oedema. So far it has not been possible to associate with this renal oedema any fixed type of renal lesion. We can subdivide our nephritic patients into two groups, one with oedema and one without. Those with marked oedema in whom the cardiac element can be excluded are a far smaller group than those without oedema or with only slight oedema.

Of patients with nephritic lesions some give a definite history indicating a development from an attack of acute nephritis. Most, however, give no such history, and when first observed show disturbances in renal function, none of which would indicate a process in any sense acute. As they progress, renal insufficiency becomes more evident without essentially changing in character unless an acute process is superimposed on the chronic or a vascular or

myocardial disturbance is added to the previous renal picture. They have been cases of nephritis of a chronic type throughout their course.

Patients belonging to the cardio-vascular-renal group, which have as a common factor albuminuria and cylindruria in varying degrees, then may be classified for clinical purposes as follows:

1. Patients with hypertension without definite cardiac or renal insufficiency; primary or essential hypertension. In some of these cases albuminuria and cylindruria is only occasionally present.

2. Patients with hypertension with renal insufficiency most of whom in later stages show cardiac insufficiency; cardio-renal cases in the later stages.

3. Patients with renal insufficiency with or without hypertension; the latter when present having developed secondarily to the renal insufficiency; chronic nephritis with or without hypertension.

In Group 1 considerable oedema does not occur. In Group 2 considerable oedema is frequent and when present is usually of cardiac origin, though it may be of combined cardiac and renal origin. In Group 3 considerable oedema occurs, but is not very frequently met with; when it occurs it is of renal origin. In these types where hypertension is present as the disease progresses signs of chronic myocarditis usually appear until myocardial insufficiency becomes an important factor.

In diagnosing these various types the tests of renal function which I have enumerated help very greatly in determining the part played by renal insufficiency in the symptom complex. Using these tests we obtain data which indicates also the degree of the severity of the renal disturbance from the point of view of chronic nephritis. In each case after consideration has been given to the cardio-vascular element this allows of a prognosis. Prognosis based on tests of renal function is most likely to be correct in those cases in which blood pressure is not very high and the signs of organic cardio-vascular disease are slight.

In order satisfactorily to treat these patients much reliance should be placed on the relative degree of disturbance of renal function and the presence or absence of oedema. Very rigid dietary limitations are desirable only for those patients with very low renal function. Oedema with fair renal function is almost always of cardiac origin and responds well to digitalis followed by a diuretic.

On the other hand oedema with poor renal function is usually of renal origin and digitalis and diuretics produce very little diuresis and are apt to be injurious. Very often in these patients functional tests show very poor salt elimination, and here salt restriction in the diet often greatly reduces the oedema. Patients with high values for blood urea especially are improved by sweating, purging and bleeding.

In what I have said of classification I have made no use of the terms interstitial and parenchymatous or glomerular. A few patients are encountered who show the characteristics of the text book picture of these two types of nephritis. There is no reason for not using these terms in the diagnosis of such cases. The majority of patients, however, differ from these types, in fact, are mixed types and to try to force such into the one group or the other leads to confusion rather than clarity. As our knowledge stands today it seems to me wiser to drop these terms very largely from our clinical classification and in their place to utilize the simple descriptive terms as suggested above which indicate with the chronic nephritis the presence or absence of hypertension and the presence or absence of myocardial insufficiency. Cases with hypertension in whom tests of renal function show very little disturbance should be classed as cases of primary or essential hypertension and not as cases of nephritis. In this last group by the time death comes autopsy will show very definite renal lesions of the interstitial type, but they are relatively slight and should not be given too great importance in explaining the clinical course of the disease. In my opinion these renal changes are secondary and during the long period of hypertension they developed as the result of vascular disturbance within the kidney. That they could have been the primary cause of the hypertension in this type of case seems to me inconceivable.

ANTRUM SURGERY

BY S. MARSHALL WEAVER, DD. S.

CLEVELAND

In order that we may be thoroughly refreshed on the structures under discussion, I will take the liberty of reviewing in detail the immediate anatomy.

The maxillary sinus or antrum of Highmore is the largest pneumatic space communicating with the nasal fossa, and is situated in the body of the maxillary bone.

In the typical specimen the cavity is somewhat pyramidal in shape, with its base toward the nasal fossa, and its apex extending toward and sometimes in the malar bone. Aside from this typical shape the maxillary sinus varies very much in form and size in different individuals and on the two sides in the same individual. The cavity is lined with muco-periosteum surmounted by a layer of ciliated columnar epithelium. The floor of the maxillary sinus is composed of the alveolar process. It presents conic elevations corresponding to the apices of the roots of the molar and sometimes of the bicuspid. It may also represent partial septa extending transversely. According to Ivery "complete septae are never found in the maxillary sinus." The roof of the maxillary sinus is formed by the orbital plate of the maxillary bone which separates it from the orbit. It represents a ridge of bone inclosing the canal for the passage of the infra-orbital vessels and nerves. The anterior wall is formed by the facial portion of the maxilla, containing the anterior dental canal, transmitting nerves and vessels to the incisor teeth. The posterior wall by the zygomatic plate. The nasal wall is formed chiefly by the maxilla, aided by the inferior turbinated, ethmoid, and palate bones. This partition separates the maxillary sinus from the nasal fossa. At the upper anterior portion of this wall is found the ostium maxillary, an oval foramen, which affords communication between the maxillary sinus and the middle meatus, opening directly into the hiatus semilunaris, and affords the only opening of the antrum of Highmore.

Under normal conditions there is communication between the maxillary sinus and the frontal sinus through the ostium maxillary,

the hiatus semilunar and the ostium frontal. By this communication, disease from the teeth may be spread through the antrum to the frontal sinus and pneumatic spaces.

The maxillary sinus may be the seat of catarrhal inflammation, empyema or suppurative inflammation, impacted teeth, tumors and polypus. Catarrhal inflammation is usually the result of extension of catarrh from the nose and associated air cells. The inflammation extends from the middle meatus of the nose by way of the hiatus semilunar and ostium maxillary. The mucous membrane becomes swollen and secretes mucus. This blocks up the ostium maxillary, and when the antrum is filled the pressure gives rise to pain. This may be termed simple acute catarrhal inflammation, and is not necessarily operative, but may be treated with nasal sprays. A 2% solution of cocaine in 1/1000 adrenalin chloride applied on a probe wrapped with cotton will give almost immediate relief, and will allow the antrum to empty by constricting the tissue surrounding the ostium maxillary.

Supposing the right side is affected, instruct the patient to lie crosswise of a bed with head hanging down over the edge with the affected side up. With the finger, close the left or lower nostril, instructing the patient to gently blow, causing the air to pass by the ostium maxillary or opening or antrum. The action works similar to a saliva ejector, and sucks the secretions out of the antrum. This can be repeated every hour or so, and gives great relief. A teaspoonful of gum camphor put in boiling water and placed so the steam is inhaled will be found very soothing, when the patient cannot reach a physician or dentist. Two rhinitis tablets full strength and 10 grains of aspirin taken alternately every two hours should always be administered. This treatment arrests the secretion and relieves the pain.

Suppurative inflammation or empyema may be caused from infection extending from the nose and associated air cells, or from penetration through the floor of the antrum, of bacteria and their products, arising from infected teeth, although nature stops a great many of the latter infections by hyperplasia. Robert H. Ivey makes a statement that "A great many more teeth are lost through diseases of the antrum than cases in which the teeth are primarily diseased and cause infection of the antrum." Symptoms of acute empyema are pain, swelling and tenderness over the affected side of the face.

Pus may flow from the nostril when the head is held forward and downward with the affected side up. A sweetish taste is invariably present in the morning.

An enlarged turbinate or deflected septum is often the seat of trouble. This becomes inflamed from the effect of a cold and blocks up the ostium maxillary; if this keeps recurring it is best to snip the end of the turbinate off, making an unobstructed passage.

Infection is carried into the antrum many times by hard blowing of the nose. Pinching the nose too tightly when blowing is dangerous to both the ears and the antrum.

If infection comes from the tooth, the radiogram will aid materially in diagnosis. The tooth should be treated before the antrum is operated on, in order to eliminate the source of infection. This special treatment consists in applying rubber dam, cleansing the tooth thoroughly with agents best suited for the case, and finally filling the canals full of bismuth paste, forcing the paste through into the antrum. The permanent root filling may be put in later.

Chronic suppuration is usually accompanied by very little pain and little or no swelling. The flow of pus is about the only symptom recognizable by the patient. This may be from the nose or a fistula in the mouth. The dentist should be able to recognize a difference in the appearance of the opposite sides of the face, the eye on the affected side will have a different look hard to explain unless we say a dulled expression. To determine which antrum is affected in cases where there is a question, hold the patient's cheeks between the palms of your hands, allowing the thumbs to press gently downward and backward over both infra-orbital foramen with equal pressure. The patient will flinch away from the affected side. Transillumination is employed but not reliable. If there is a question as to whether the antrum contains pus, the only positive diagnosis is to puncture the antrum with a hollow trocar through the nasal wall, and wash it out with clear sterile water. If pus is present it can easily be seen in the washing, and usually manifests itself in small floccular particles or large clots of white or yellow pus, generally the latter, and is invariably accompanied by a strong odor.

Infiltrated tissue will often show up as cloudy, in the full cranial radiogram, giving the operator the impression that pus is present when it is not. As the puncture can be made in 10 minutes without pain, and with positive results, why submit the patient to

this extra \$10 or \$15 expense for an uncertainty? The puncture can be made under a local anaesthetic or gas. There is no after pain or soreness. This treatment can be repeated if necessary several times, but quite often one washing will take care of the acute cases.

Surgical treatment consists in making an opening into the maxillary sinus for drainage, observation and currettement; this may be done in the following ways:

1. Through the socket of an extracted tooth.
2. (Radical) through the nose.
3. Through the canine fossa.
4. Through the alveolar process just above the second bicuspid tooth.

I wish to advise against the first and most common method, that of opening through the tooth socket. It is absolutely useless to sacrifice a good tooth and even one that may have caused infection, for the opening may be made over the affected tooth, the affected area properly curretted, and all taken care of in the one operation, aside from sacrificing the tooth, the socket may not be and usually is not the most dependent portion of the floor. Also if septa are present the drainage is imperfect and removal of the septum is practically impossible from this kind of opening. Owing to the thickness of the alveolus and lack of soft tissue, these openings are not easily closed up.

The second, or radical through the nose has several drawbacks. First, it is necessarily the most mutilating of all. The operation consists of the removal of the anterior portion of the inferior turbinate, and breaking down of the entire nasal wall of the antrum. All packing has to be inserted through the nose. After recovery the patient is quite often annoyed by having large quantities of mucus run unceremoniously out of the nose if the head is tipped forward, caused by the floor of the antrum being lower than the nose, thus forming a receptacle. It also affects the resonance of the voice to a certain extent. In cold weather the patient may complain of extreme sensitiveness and neuralgic pains due to the lack of the protecting nasal wall. It also allows dust and mucus to enter the antrum, thus becoming a constant irritant and making the permanent cure of the disease impossible. Nasal mucus will enter these large openings, become encrusted, and cannot be removed except with great difficulty.

The third and fourth are nearly similar in position and ease of operation, though I prefer the latter position principally because the bone is thinner at this location. The idea of being at the most dependent point is not so important, where the opening is made large enough for proper curetting and packing.

My technique for opening the maxillary sinus is as follows: The patient should be placed under gas or novocaine, if novocaine use the conductive method. With a sharp lancet make an incision one and one-half inch long, across the field of operation parallel with the occlusal plane, or you may curve the center of the line down one-half inch, making a flap to be lifted up while operating. Push up the tissue from the bone with an osteotome. This is to prevent the tissue from winding up on the bone bur. Hold the flap back with retractors, and with a bone bur puncture the wall, then use a large bone bur similar to a dentate fissure, and enlarge the opening to about three-quarters of an inch laterally and one-half or three-quarters of an inch vertically, as the case may require. Extend the opening laterally and downward rather than upward, to avoid injury to the infra-orbital vessels and nerves. After the opening is completed and large enough for good vision, and to admit the index finger, insert a safe-edged loop curet, and thoroughly explore every portion of the antrum for polypi. This curet will pass over the mucous membrane without injury, and at the same time remove any projecting growth. If infection was caused by an abscessed tooth, the region around the root of the affected tooth should be thoroughly curetted with a spoon curet, removing all necrotic bone. Quite often the antrum is found packed full of polypi. These polypi are pedunculated growths covered with mucous membrane. They are an over-growth of the submucous tissue, and contain cystic areas filled with mucus. They follow chronic inflammatory conditions.

We also find the fibrous polypi, springing from the periosteum. They are felt as soft and semi-solid masses, bleeding easily on touch. After curetting thoroughly, wash out with normal saline solution, removing all loose pieces of tissue. Dry out the antrum with gauze sponges, then swab with cotton saturated with glycerol iodide, and pack *full* with iodoform or borated gauze, changing this every day for about 10 days, and thoroughly irrigating with the normal saline at about 105°. After the tenth day simply pack the opening with gauze sufficient to retain the required size for the insertion of the nozzle of the irrigating tube. After about ten more days the pack-

ing may be dispensed with for the wound will remain open for a considerable time. At this stage you may mold a modeling compound plug to fit the opening. This can be replaced after each treatment. The patient may be given a soft nosed bulb syringe, and instructed how to irrigate at least twice daily. Thorough irrigating with a saline solution is better than strong irritating drugs. Keep any wound clean and nature will do a great deal.

If the case does not clear up in a reasonable length of time, and seems to be reinfected, the frontal sinus may be the seat of infection. Here the full carnial radiogram will be of considerable help, and if found necessary to operate, I believe the general surgeon or rhinologist is the best fitted for this work.

Dr. M. W. Cryer first pointed out that direct communication was frequently found between the frontal sinus and the antrum, and Schaeffer claims that 56% of all cases examined show this.

Drainage tubes are *never* indicated. They are liable to become lost in the antrum and cause future trouble. Doctor Cryer states that 75% of cases under his observation come from dental causes.

Mikulitz operation, which calls for the removal of a portion of the nasal wall, including a part or all of the inferior turbinated bone in order to make a large permanent opening, is rightfully being abandoned in the light of better methods. Every surgical operation should be made with the view of leaving the parts in as nearly a *normal anatomical* condition as possible. Consequently the enlarged openings through the nose are absolutely contra-indicated in view of all the *permanent injuries* that may ensue, when more conservative methods will cure the disease and preserve the integrity of the tissue.

I am aware that many operate through the nose, where a good vision of the interior of the antrum is difficult if not impossible, where infection is just as liable to occur as through the mouth, and where access to all surfaces of the antrum is much more difficult. I want to ask why make the operation harder, why not open at the most accessible point and the best visual aspect, when all abnormalities can be recognized and taken care of with the greatest ease and assurance of their complete removal.

I will now show a few cases in practice, and instruments used in handling the cases.

Fig. No. 1. Shows proper place to open most antrums.



No. 1

Fig. No. 2. Heavy lancets and osteotome for making incision and removing tissue from bone.



No. 2

Fig. No. 3. Surgical burs used for removing bone.



No. 3

Fig. No. 4. Loop curet which does not cut on the edge but will cut off any growth projecting from the surface.



No. 4

Fig. No. 5. Different styles of bone curets used to remove necrotic areas.



No. 5

Fig. No. 6. Six-ounce all metal syringe that can be sterilized, also showing different sized points.



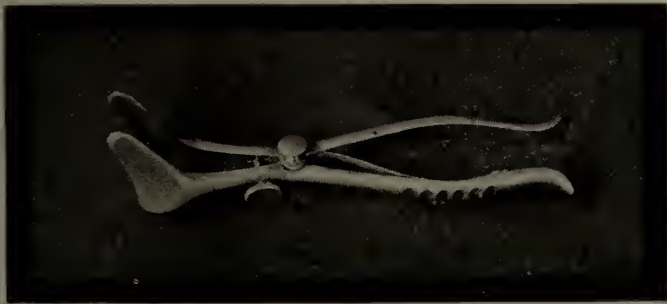
No. 6

Fig. No. 7. Soft nosed bulb syringe used for home irrigating.



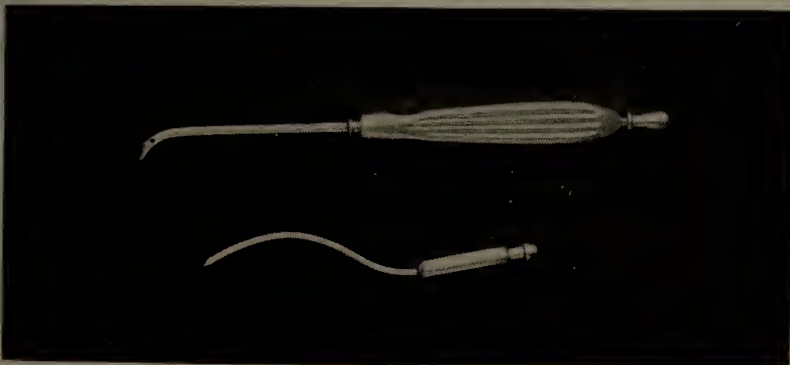
No. 7

Fig. No. 8. Nose speculum, a very important instrument in diagnosis.



No. 8

Fig. No. 9. Hollow trocars used to puncture nasal wall of antrum for exploratory puncture.



No. 9

Fig. No. 10. Please notice in this skull that the roots of all the molars penetrate the floor of the antrum and also a beautiful septum extending across the antrum directly over the second bicuspid and about $\frac{3}{4}$ -inch high, separating the antrum into two distinct chambers, with the cuspid and two bicuspid roots in the anterior chamber. This demonstrates why drainage tubes are not indicated and also why we should enter the antrum where the partitions can be easily broken down.



No. 10

Fig. No. 11. Radiogram taken of plate ten to demonstrate how the septum would show where we know the exact conditions.



No. 11

Fig. No. 12. Shows remarkable dip of the antrum floor.



No. 12

Fig. No. 13. Shows another septum and an irregular floor.



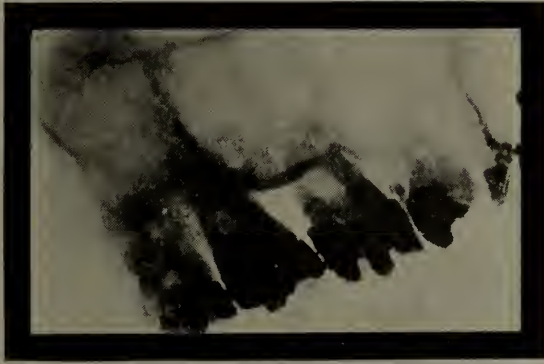
No. 13

Fig. No. 14. Shows the necrotic area around the cuspid root. This penetrated the antrum and caused severe trouble. The radiogram was taken after the root canal was filled and antrum curetted. Later we found every tooth on this side putrescent and penetrating the antrum floor.



No. 14

Fig. No. 15. This patient suffered with severe neuralgia in the mastoid region and in the top of the head, both entirely relieved after the operation.



No. 15

Fig. No. 16. Shows antral infection from the putrescent second bicuspid. A broach passed freely into the antrum, but there seemed to be little if any destruction of bone. This case cleared up with a very few treatments.



No. 16

Fig. No. 17. Shows what nature will attempt to do by hyperplasia. Notice how the floor has been pushed up in an attempt to confine the affected area. This patient was seriously ill, and had been treated for liver trouble for nine months. Finally she detected a slight swelling over the first bicuspid root and came to me for treatment. The radiogram disclosed an abscess over the second bicuspid, in attempting to curet out the necrotic tissue we found it communicated with the antrum, which was filled with pus. Thorough curetting of the surrounding tissue and irrigation for a couple of weeks brought about her complete recovery.



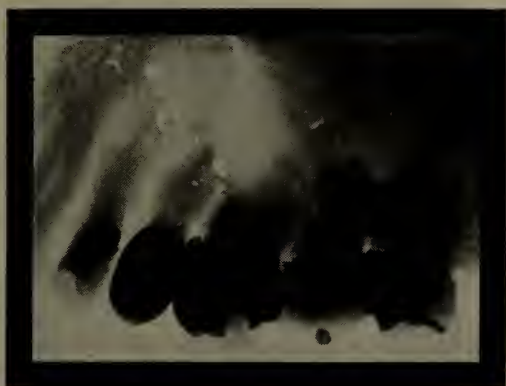
No. 17

Fig. No. 18. Shows infection from the cuspid, this case being of long standing. The antrum was packed solid with polypi and necessitated treatment for about 12 weeks before we had complete recovery.



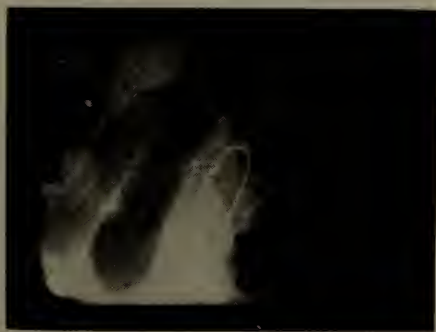
No. 18

Fig. No. 19. This is the radiogram of a physician's mouth, showing three putrescent teeth all communicating with the antrum. These teeth all had to be properly taken care of and the roots filled before the source of infection was removed, then we opened through the canine fossa and thoroughly curetted the antrum which responded nicely to treatment and cleared up in about a month.



No. 19

Fig. No. 20. Shows antrum infected from a crowned second bicuspid.



No. 20

Fig. No. 21. Note the large area of absorption over the region of the first molar. This patient had his antrum opened 10 years previous, and there still remained a large fistula exuding quantities of pus when the cheek was lifted up. On examining the nose I found the septum so deflected that the osteum maxillary was completely closed. I referred him to a specialist for correction, and after four days he called up and informed me that the pus had entirely stopped flowing, and that he had not had any further trouble. It seems incredible that his antrum will clear up without surgical treatment.



No. 21

Fig. No. 22. Shows rubber drainage tubes that were lost in antrum for over two years, causing necrosis of the entire floor of the antrum. This is one reason why they should never be used.



No. 22

Fig. No. 23. Showing the entire bony structure infiltrated with pus from the antrum necessitating its entire removal.



No. 23

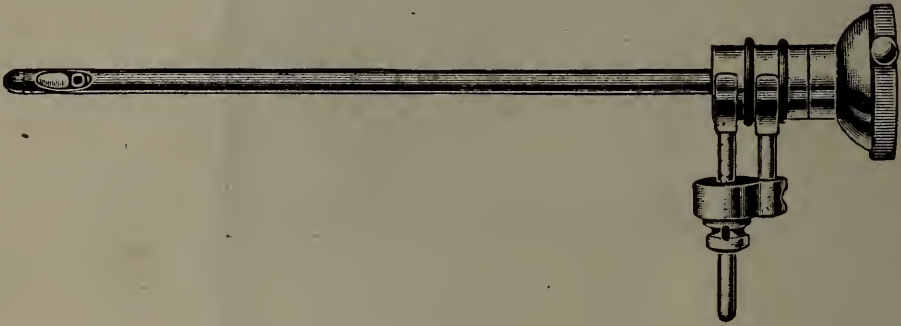
Fig. No. 24. Shows infection in the left antrum of 17 years' standing, caused by a devitalized first bicuspid. There was a fibrous growth in the roof of the mouth and extension necrosis around the apex of the tooth, which necessitated its extraction. Recovery in nine weeks. The frontal sinus had to be drained before complete relief was obtained.



No. 24

In all the cases that have come under my observation, only two were without dental origin, and if this is true how can we expect men to perfect a permanent cure by simply treating the case without removing the source of infection.

In conclusion I wish to make a plea for more men to take up this line of work, so as to be in a position to diagnose and relieve these conditions, especially since statistics prove practically 75 per cent of the cases are of dental origin and must be treated by a skilled dentist before permanent cure is obtained. No. 25 shows the acmi-



No. 25

naso-pharyngoscope. This instrument I have employed for antrum work, and it is simply a wonder in watching the progress of repair in the antral cavity. It contains a powerful light at the end and a wonderful system of lenses, which reflects the the interior of the cavity walls as perfectly as if you were looking at them directly.

This enables the operator to introduce the scope at any time and see exactly the conditions of the antrum and how things are progressing.

With this light to aid you it will be possible to know the condition, instead of guessing, both in post-operative examinations and diagnostic punctures.

FRACTURE OF THE SPINE WITHOUT CORD INVOLVEMENT*

BY WALTER G. STERN, M. D., F. A. C. S.

CLEVELAND

It is not the purpose of this paper to enter into a didactic discussion on the subject of "Fractures of the Vertebral Column," but rather to sketch the frequency of its occurrence, its importance, the difficulty of correct diagnosis, the disability, the treatment and the ultimate fate of the patients. For the many topics not discussed in this paper the interested reader is referred to the latest text books and to the many excellent papers appearing in the recent surgical journals.

The recent great improvement in radiological technic and its almost universal use in the last few years in all the hospitals and medical centers of this country, as well as the greater frequency of serious injuries—due to the widespread use of the automobile, the speeding up processes in the industries, and other factors—have so increased the number of diagnosed cases of fracture of the spine that, with and without cord involvement, they make up about 8 per cent of all fractures seen in those hospitals which attend to a large volume of casualty work. Of these cases, by far the larger proportion are without cord involvement and therefore are more difficult of diagnosis.

"The immediate importance of fractures of the spine depends of course upon the associated or potential injuries to the nerve centers; but they have the additional importance due to the functions of the spine as a delicate and complicated organ of motion, as a support for the head and trunk, for the assumption of the erect posture and the maintainance of the power of locomotion."

There are many varieties of vertebral fractures, isolated fracture of the bodies; of the arches; of the transverse processes; of the spinous processes; combinations of any or all of these, and finally the combination of any of the aforementioned fractures with dislocations.

The cause of spinal fractures is to be found in either direct or indirect violence and sometimes in unusual muscle effort. Men

*An address delivered before the Cleveland Academy of Medicine, February 16th, 1917.

are afflicted more frequently than women and children, but the proportion of the latter is rapidly increasing, due no doubt to the ever increasing number of traffic injuries.

The results of direct violence, such as injuries inflicted by the wheels of moving vehicles, or by falling and moving objects, such as pipes, telegraph poles, projections from railway cars, cement buckets or traveling cranes, are usually confined to the spinous processes and arches; the bodies may at times be broken by direct violence without shearing off of the cord. We know of three recent cases where osteopaths or chiropractors have fractured the spine by their violence.

The most frequent cause of vertebral fracture is indirect violence, which gives rise to a hyper-flexion or hyper-extension of the trunk or to a shortening of the longitudinal axis of the column, beyond the limits of its elasticity. When these factors are combined with lateral bending, more or less rotation or tilting of the body of the injured vertebra takes place. Such indirect violence is seen when the trunk is forcibly hyper-flexed, as when the shoulders are jammed under the arch, or where a downward force crushes upon the head and shoulders and bends them forward. Often in falls from a height, the part of the body which strikes the ground acts as a fulcrum, while the rest of the body, through its great inertia, becomes hyper-flexed or extended, thus causing the fracture through compression. Fractures received in diving into shallow water are due to hyper-flexion; in wrestling to hyper-extension. Where, in falls from a height, the body lands perpendicularly upon the head, shoulders, buttocks or feet, the long axis of the spine is often shortened sufficiently to crush the bodies and inter-vertebral disks (indirect contusion).

The spinous processes, especially those of the dorsal region, have been known to have been torn off by violent muscle action; Feiner reports several cases of fracture of the articular processes, with rotation of the body of the fifth lumbar vertebra, due to the sudden and violent muscle effort of trying to regain lost balance whilst carrying a heavy burden upon the head, shoulders or arms (overbalancing fracture).

Isolated fractures of the lateral processes may occur as the result of direct violence; or in the dorsal region by a component of forces acting upon and through the ribs at their vertebral articulations. As I have in my possession radiographs showing a pulling

off of small particles from the lateral processes of protected vertebrae, not due to direct violence, I am compelled to conclude that excessive side bending may give rise to sprain-fractures of the lateral processes from excessive stretching and tearing out of the ligamentum intertransversarium.

In the shortening of the longitudinal axis of the vertebral column (indirect contusion), fracture results because the limit of compression has been reached and the bony segments are crushed by the force. Such fractures usually occur in the regions where the spine is least flexible, as in the dorsal region. The articular processes which are the first bony structures to receive the impact are usually damaged, whilst the inter-vertebral disks are crushed and split.

Fractures from the compression of hyperflexion or hyperextension are most commonly found in regions where a flexible segment joins a more rigid portion, as in the dorso-lumbar, dorso-cervical, cervico-occipital regions. In a chart prepared by Murphy fully 60 per cent of all spinal fractures are noted to occur between the level of the 11th dorsal and the 2nd lumbar vertebrae.

Special mention must be made of the upper cervical region. Fractures of the odontoid process of the axis and of the body of the axis, with a dislocation of the atlas upon the axis, are not uncommon and unless the dislocation is extreme, little or no paralysis supervenes. This is true of the entire cervical region; many cases are on record of total dislocation of the cervical vertebrae, so complete that the lower surface of the upper vertebra rests upon the anterior surface of the lower vertebra, in which the cord escaped injury.

Dislocation, in its strict meaning, and rupture of the inter-vertebral ligaments are usually a part of the picture of fracture. In 1904 Reuter, working in Kalisko's Medico-legal Institute in Vienna, showed that in addition to the lesions demonstrable by means of the X-ray, there were always numerous smaller ones, distributed over a rather wide area; infractions of the bodies, small hemorrhages under the periosteum and perichondrium, fissures of the discs, lacerations of the ligaments, etc., which later on gave rise to a condition of chronic ankylosis of the spine. Many of the late symptoms of fracture are due to these complications.

The refinements of our methods of diagnosis has convinced all thinkers and many of the writers of this subject that the *indis-*

criminate diagnosis of traumatic spinal neurosis, "railroad spine," etc., must be abandoned except in special cases; and even then not until all the resources of diagnosis have been repeatedly tried by *different* men under *different* conditions. Too often have injured men been called neurotic or even malingerers (even after radiographic examination), only to have the case cleared up and a positive diagnosis made from a chance finding or a specially fortunate plate. A safe rule to follow is to hold all cases of pain and stiffness in the back following trauma or violent muscular exertion, lasting for *more than three weeks*, as *suspected* fractures, unless there is positive evidence to the contrary. Unless the nerves are injured, the crushing very extensive or the pain and tenderness excessive, these patients are soon able to walk about. Many are never even in bed for more than a few hours or a few days.

All traumata of the back can be divided into four general classes: 1. Contusions; 2. Sprains; 3. Fractures; 4. Dislocations. By contusion is meant the direct trauma received by the muscle and soft parts over, or more frequently to one side of, the spinal column. The average duration of the pain and stiffness is three weeks. If the disability lasts longer than three weeks the case is not a simple contusion.

A sprain is the bending, stretching or twisting of the spinal muscles or ligaments beyond their physiological limits. It is most common in the lower lumbar region. Except for an increase in the physiological curves there is no deformity of the spine in connection with contusions or sprains; there is also no absolute fixation; all normal movements can be carried out, though very painful. Often to relieve the pain of a lumbo-sacral strain the patient may assume the position of lumbar scoliosis while standing, but this will disappear again as soon as the patient lies down. Contusion and sprain can, however, cause changes in the reflexes and disturbances in the functions of the bladder and bowels.

Fractures and dislocations give rise to the symptoms of localized pain, tenderness and fixation in the segment involved. There may or may not be a kyphosis, lordosis, scoliosis or obliteration of the normal curves of the back. The back is lame, sore and weak, and where a spinous process is fractured direct crepitus may be palpable. One of my cases of fractured spinous processes has an audible click accompanying certain rotary motions. There may also

be an inequality in the spacing, an asymmetry or even a projection outward of the spinous process of the injured vertebra. Muscle spasm is present and, especially in the cervical region, may fix the part in a characteristic position: cervical region, neck flexed forward and head extended backward on the atlas. Later on, a kyphosis may develop and increase, and finally the spine may stiffen in this position.

As this paper deals only with cases not involving the spinal cord, the symptoms usually associated with such injury, which make such types easily recognizable, are omitted. The cord usually ends at the level of the 1st lumbar vertebra and escapes in fracture below this level, although the cauda equina may be damaged. Oedema and hemorrhage may lead to a paralysis which usually clears up. One interesting condition must be mentioned; in fracture-dislocations (the upper part of a segment is always spoken of as being dislocated upon the lower) the cord is dragged forward upon the upper posterior edge of the proximal vertebra of the lower segment. As it is suspended free in the vertebral canal and meningeal space the cord is, of course, free to stretch and bend, so that only the posterior spinal roots, fixed within the intervertebral canals, are stretched or injured. This gives rise to the typical posterior root pains so often complained of and is to be treated and cared for by surgical intervention when necessary.

The radiograph is, of course, the final and best arbiter of the presence of fracture, and fracture-dislocations. If, following a trauma to the head, neck, shoulder or buttock, after a fall or jump from a height or after a sudden muscle effort, pain either local or referred to a distant part of the vertebral column should be complained of; or if after direct violence to the back, or after hyperflexion, hyperextension, violent movements, etc., the pain in the back should persist after a week of rest in bed, then it becomes imperative that careful radiographs be made to confirm or disprove the suspicion of fracture of the spine. Do not allow such a patient to leave the hospital without a radiograph. In Ohio a malpractice lawyer seems to be hiding behind every shadow. Do not continue to treat a case complaining of such pain for more than a week, unless they are willing to be radiographed; if bed-ridden they can be conveyed to the X-ray machine in an invalid carriage, or a tentative diagnosis of fracture made as a safeguard. Above all do not

allow the fact that the patient can walk about with comfort mislead you into a false feeling of security that such a case cannot be one of fracture on this account.

The radiographs, unless taken both antero-posteriorly (preferably stereoscopic) and laterally and of exceptional quality, are apt to be misleading. For compression fractures of the body a lateral view is best. A poor radiograph is worse than none and no one but the most expert and most experienced should venture to radiograph any but the simplest cases where cord involvement makes the diagnosis easy. I was recently called into a southern city to see a case of complete paraplegia due to a fall from a step-ladder, where an attempt was made to radiograph a suspected fracture of the 6th cervical vertebra by means of a portable high frequency coil. After taking 18 plates in the course of a week, one was finally secured which seemed to show a compression fracture of the body of the 6th cervical vertebra. This agreed with the level of the paralysis; but it was then too late to operate, and the patient soon died of exhaustion. Where there are symptoms of pain, rigidity, loss of function, inability to resume work, or where a kyphosis or deformity develops after the injury, the case must be repeatedly radiographed. One of my most interesting cases of fracture with rotation of the 5th lumbar vertebra, passed through the routine examination of two great Philadelphia hospitals, without the proper diagnosis having been made. There was even a letter from an eminent eastern neurologist holding that in the absence of positive radiographic findings, the patient must necessarily be a malingerer. Stereoscopic radiographs made in Cleveland clearly show a fracture of an articular process, fractures of the lateral processes and a fracture of the body of the 5th lumbar vertebra, with an excessive amount of tilting of this vertebra upon the sacrum.

The progress of any given case of fracture of the spine is necessarily very slow, since the formation of true callus in the vertebral osseous tissue is very slight in comparison with that formed in the long bones. *True union* often does *not* take place. This is most frequently seen in fractures of the odontoid process. In compression fractures of the bodies, absorption and rarification of the bone and intervertebral discs often takes place. Thus we see that soon after the erect posture is assumed a kyphosis slowly develops over the seat of fracture and the afflicted segment sags forward,

while the patient complains more and more of weakness in the back and legs, inability to walk erect and of an increasing amount of pain due to the pull on the posterior nerve roots.

Another progressive change is the infiltration and contracture of the damaged ligaments and soft parts, which finally binds the spine firmly in its deformed position without materially adding to the strength of the spinal column. This has long been known as Bechterew's Kyphosis or Kummell's disease. This condition tends to increase and with it the pain and discomfort on motion or muscle effort increases rather than diminishes, until the spine finally comes to rest with the deformity at its maximum and ankylosis then takes place. The deformity following fracture of the spine is usually quite severe; in fact, out of proportion to the deformity seen in bony injuries of exactly the same extent in other parts of the body. The patients cannot return to work for a long time. Many can never again perform ordinary hard manual labor. It has been customary in Germany to allow such injured persons a permanent partial indemnity of from 33 1/3 to 75 per cent of their wages to compensate for their decreased earning capacity. I have in mind one case of fracture of the spinous process of the 2nd dorsal vertebra, who could not return to full manual labor for 18 months; and, as so many of the victims are ignorant laborers and have not the mental capacity for fulfilling the requirements "of a light job," it is a grave sociological question as to what compensation should actually be allowed.

To avoid kyphosis, to relieve the pressure upon the bodies and intervertebral disks, to decrease the pull and irritation upon the posterior nerve roots, suspected fractures should at once be placed upon a bent gas pipe frame so constructed that the body is firmly held in maximal hyperextension, and such position increased when possible, just as one carries out the treatment of Pott's disease. After about three months recumbency, the patient can be allowed up either wearing a Calot's plaster jacket or a Taylor's spinal brace. In fact, except for the tuberculous element, the late symptoms of and the treatment for fracture of the body of the vertebra is quite similar to that of Pott's disease.

Possible dislocation or rotation of the vertebral bodies and articular processes, especially those of the cervical and lower lumbar region, should be reduced by careful manipulations under gen-

eral anesthesia and the part securely fixed in correction in a plaster cast. Care must be taken not to injure the cord. It is remarkable how much dislocation of the vertebrae can exist in the cervical region without any injury having been done to the cord. For details one should consult the monographs of Sever, Osgood, Reuter, and others.

If, after a period of from three to six months, normal or nearly normal function has not returned, if there is still pain, weakness, and increasing kyphosis, then operative interference should be considered. Ununited spinous and lateral processes should be removed, crushed laminae and articular processes resected and the intervertebral foramina enlarged. Weak and sagging vertebral columns can readily be ankylosed and strengthened by means of an inlay bone graft into the split spinous processes (Albee operation). This has proved to be the most satisfactory means of improving the condition of the injured patient as to ability to stand erect and to walk freely without pain, and of restoring them to at least some resemblance to their former function.

821 Schofield Bldg.

CLEVELAND'S ROLE IN MEDICAL WAR RELIEF

BY RUTH FOLLETT STONE

CLEVELAND

Since Cleveland has the proud distinction of sending the first organized body of Americans to set foot on French soil in this war, it seems appropriate that we shall all understand what we are about to contribute in the way of Medical War Relief and Red Cross Service, and how these agencies are now organized to co-operate in the furnishing of Medical and Sanitary aid.

In giving a short history of the development of the Red Cross Base Hospitals, we cannot do better first than to quote from an article written by Colonel J. R. Kean, U. S. Army Director, General of Military Relief, American Red Cross, and printed in the *Military Surgeon* for May, 1916, giving the plan of organization as outlined at that time:

"It being admittedly impossible for the regular medical establishments of the Army and Navy to be organized on a scale sufficiently extensive to supply the medical service of the large number of troops which are raised in time of war, such preparation must be made by some other agency in time of peace in order to prevent a complete breakdown of the medical service at the beginning of a war. This has occurred at the beginning of all our wars in the past and has caused infinite suffering and loss of valuable lives. This failure to provide what the soldiers have a right to expect causes suffering also in the families dependent upon them and doubtless contributes in an important degree to the failure of the volunteer method of raising armies. The National Red Cross has been designated by Congress and by the Proclamation of the President of the United States of August 22, 1911, as the other agency which must make preparations in time of peace to assist the medical departments of the Army and Navy in war.

"The present conception of the role of the Red Cross in relation to the medical service of the Government differs in important respects from that which has heretofore governed its activities. The work of the Red Cross in the Spanish War followed in a general way the precedents and lines of the Sanitary Commission during the Civil War. It was, in the words of Col. Munson, the 'Fairy Godmother' of the medical organizations, bringing the sick comforts and luxuries, and in some cases necessities also, which were not furnished by the Medical Department. It also assisted in a very substantial way by furnishing nurses and helpers, trained and untrained. The new conception includes this, but considerably more, and can be best given after a brief preliminary statement of the essentials of the medical service in war.

"This consists of three zones: (1) That of the front, which extends from the battle line back to the evacuation hospitals; (2) that of the line of communications and base, and (3) that of the interior or home country.

"The service of the front is the exclusive responsibility of the Regular Army medical service and for volunteer armies, of the volunteer medical service, with such assistance as can be given by the regular service in the way of trained officers for the more important administrative positions. This

service is essentially one of transportation of the wounded to the rear. Its hospitals are not really hospitals at all, but are temporary lodging places for the wounded, where their wounds are dressed and they are sheltered and fed until they can be transported. This service in our country demands about five medical officers to each thousand troops. In the European services it requires on the average about four.

"The second zone, of communications and base, employs two kinds of units—field columns, which are transporting agencies; and base hospitals, which receive and give adequate medical and surgical service to the sick and wounded. This service in our country has never been organized until war begins; and the hospital service provided has been, therefore, at the beginning of our wars inevitably deficient, untrained and unsatisfactory and a vast amount of unnecessary suffering and loss of valuable lives has been the result.

"The third service receives the wounded and sick who are transferred from the base hospitals as they become overcrowded; and also the convalescents who are able to travel but require further medical treatment before their return to the colors. This zone includes the army general hospitals and the great civil hospitals of the country which under arrangements with the medical department receive and treat the sick. The French are said to have about 4,000 of these hospitals, containing 600,000 beds.

"The medical service of the Army is therefore like a bridge of three spans, of which the first span is completed and ready for work, and the third span can be rapidly completed because the framework is already in existence. The middle span of the bridge is, however, lacking; and it is believed that the Red Cross should be the organizing agency which will complete this middle span so that the bridge will be ready for use promptly on the outbreak of war. The Red Cross fulfills this function in the Italian and Japanese services, and, to a great extent, in the German, Austro-Hungarian and other European services. It is evident that by taking up the work of organization the Red Cross will perform a public service of the highest magnitude and importance to the nation and will have in the most effective way conceivable contributed to relieve the suffering of the sick and wounded.

"The conception of the Red Cross function which was published in Circular No. 8 of the War Department, 1912, and in General Order No. 207, Navy Department, 1912, falls far short of the present scheme in scope and beneficence. Its hospital columns consist of personnel only, and the military conception of their use in both the Army and Navy was to reinforce the personnel of existing army organizations, both at the base and in the zone of the interior. Thus we read in the Regulations for General Hospitals, with regard to the personnel in war, on page 25:

"The American National Red Cross may be counted on for approximately 25 per cent of the officers of the professional division, 25 per cent of the ward attendants, and 75 per cent of the female nurses. This corresponds practically to a hospital column as defined in Circular 8, S. G. O., September 10, 1912."

"Nowhere do I recall prior to the appearance of Dr. Crile's article on surgical units a few months ago, the conception of an organization drawn from an existing civil hospital, whose personnel embraces the best medical and surgical talent in the country and is able from the start to work together by reason of their association in civil life. When we add to this conception a complete standard equipment, stored and ready for shipment, so that there will be no delay, the result is an organization of transcendent value such as no army, except perhaps Germany's has been, to my knowledge, blessed with at the beginning of a war—certainly no American army.

"The organization of the Red Cross Base Hospitals for the Army is made to correspond as nearly as possible with that of the Army General

Hospitals of 500 beds in order to facilitate their transfer to the military service when called into active service. All of the medical men enrolled in them are given commissions in the Army Medical Reserve Corps, and the nurses are enrolled members of the Red Cross Nursing Service, which is the reserve for the Army Nurse Corps and Navy Nurse Corps.

"The male administrative personnel of the hospital is required by the enrollment pledge to enlist in the Hospital Corps when called into service; but it is expected that most of these will be enlisted in the Enlisted Reserve when this is authorized by the law. The experience of European countries in the great war as regards the larger employment of women in positions where they can replace men is followed in the hospital units by the enrollment of women as stenographers and clerks. Twenty-five women who volunteer for service without pay and have undergone a prescribed course of instruction are enrolled as nurses' aids.

"It is surprising to find the readiness and enthusiasm with which the highest medical talent in the country has placed itself at the disposal of the Red Cross for the formation of these units. If a like degree of patriotism and public spirit can be found among the prominent men in other professions and employments, the equipment of these hospitals will be a very easy matter. It may not be an easy matter in some cases, but it is believed that it can be done if the chapters understand the significance and importance of the task and take it up with energy and enthusiasm.

"As the creation of the field and hospital units is a highly technical matter in which knowledge of the military medical service is essential, this work has not been delegated to the chapters but retained in the hands of the Department of Military Relief. This does not mean, however, that the chapters have no duties or obligations in connection with these units. The chapters play the role which has been happily described as that of 'Big Sisters,' who, while exercising no parental authority over the military units, undertake the important task of providing the equipment which is necessary to their functional activity. This equipment is for hospital units, that of the Army Base Hospital as given in the Manual for the Medical Department, and is estimated by the Surgeon General's Office to cost \$25,000. The complete equipment of a field column will in time of war be, with twelve motor ambulances, not less than \$30,000 and considerably more if ambulances of a heavy type are adopted; but its equipment for a peace organization, with the necessary personal and camp equipment and one motor ambulance for drill purposes, will cost less than \$10,000.

"The Military Relief Department has been authorized by the Executive Committee to organize both the hospital columns contemplated by the Orders of 1912 and the complete base hospital units such as have just been described. This will enable us to utilize the public spirit of the medical and nursing professions by organizing units consisting of personnel alone, which can be attached to Army and Navy hospitals which are already in existence or which may be organized by the medical services. The Navy being not expandable for war like the Army, will need little else than these hospital columns; and the Army will find them of great value both in the second and third zones.

"The following base hospitals are in course of enrollment: three in New York City; three in Boston; one at Johns Hopkins, Baltimore; one in Cleveland; one in Rochester, N. Y.; and one in Grand Rapids, Mich. The two latter may, however, have to be enrolled as hospital columns rather than base hospitals. At Detroit also there is a desire to organize a base hospital; and it is probable that one will be shortly undertaken in Pittsburgh.

"With regard to the organization of field columns not as much progress has been made. There are no mother institutions in which field columns can be organized as are the base hospitals in existing civil hospitals, unless we can get universities and colleges to act in such capacity. Harvard Uni-

versity has undertaken to organize a field column and we are now in correspondence with Yale and Ann Arbor on the subject. It is believed that these columns will be of great value to educational institutions as the agencies for instruction in first aid and personal hygiene, and when once started their value will soon become recognized."

It being obvious that more efficiency can be secured if Base Hospitals could be made up of men who are accustomed to each other's methods and have had similar training, and these men could have a nursing staff and administrative personnel familiar with their methods, Dr. Crile's suggestion was acted upon and it was proposed that Red Cross Base Hospitals be made up from the staff of the large, well organized hospitals throughout the country; that the equipment sufficient for the needs of a 500-bed hospital be made ready and stored; that the personnel of the hospital be so instructed and the supplies so stored that mobilization would be effected in the shortest possible space of time. Pursuant to this plan the following Base Hospitals had been organized by October, 1916:

- No. 1—Bellevue Hospital, New York City.
- No. 2—Presbyterian Hospital, New York City.
- No. 3—Mt. Sinai Hospital, New York City.
- No. 4—Lakeside Hospital, Cleveland, Ohio.
- No. 5—Harvard University Hospital, Boston, Mass.
- No. 6—Massachusetts General Hospital, Boston, Mass.
- No. 7—Boston City Hospital, Boston, Mass.
- No. 8—New York Post-Graduate Hospital, New York City.
- No. 9—New York Hospital, New York City.
- No. 10—Pennsylvania Hospital, Philadelphia, Pa.
- No. 11—St. Joseph, St. Mary and Augustana, Chicago, Ill.
- No. 12—Mercy and Wesley Hospital, Chicago, Ill.
- No. 13—Presbyterian and County, Chicago, Ill.
- No. 14—St. Luke's and Michael Reese Hospital, Chicago, Ill.
- No. 15—Lincoln Hospital, New York City.
- No. 16—German Base Hospital, New York City.
- No. 17—Harper Base Hospital, Detroit, Mich.

Red Cross Base Hospital, No. 4—Lakeside Unit

These organizations had been worked out thus far without a practical demonstration. It was, therefore, decided by the Secretary of War and by the national officials of the American Red Cross that the establishment of the practicability and efficiency of these units could be secured only by actual mobilization. In order that

the unit called into service could benefit by the criticisms and suggestions of as many Army and Navy medical and surgical experts as possible, it was decided to request one of these units to mobilize during the meeting of the Clinical Congress of Surgeons in Philadelphia, October 28th, 1916, and the Lakeside Red Cross Base Hospital Unit was asked to give its services to this end.

The complete personnel of the Lakeside Red Cross Base Hospital Unit at this time included 25 medical officers:

1 Director, 3 Assistant Directors, 6 Staff Surgeons, 5 Staff Physicians, Orthopedist, Ophthalmologist, Neurologist, Bacteriologist, Roentgenologist, Adjutant, 2 Dentists, Registrar, and Quartermaster.

Chaplain and 2 Chaplain's Assistants.

2 Pharmacists.

2 Dental Assistants.

3 Anesthetists.

50 Nurses.

25 Nurses' Aids.

2 Laboratory Assistants.

Administrative section, including record section, 11 men.

Supply section, 10 men.

Subsistence section, 28 men.

26 Orderlies.

10 Members attached Civilian Personnel.

The supplies include everything needed to completely equip a 500-bed hospital, relief supplies, operating room supplies, surgical instruments, dressings and commissary supplies.

Each member of these Base Hospitals has pledged himself ready to go into service upon call of the National Government. These units are organized and equipped for military service only.

After the mobilization had been successfully carried out in Philadelphia last October, a report of the meeting was sent to the Trustees of Lakeside Hospital by Dr. George W. Crile, the Director of Base Hospital No. 4—the Lakeside Unit—stating that the purpose of this mobilization was primarily to demonstrate that the organization existing on paper was a practical and serviceable one; secondly, to ascertain what difficulties would stand in the way of such a mobilization, in order that they might be met and removed; and, thirdly, for the instruction and medical preparedness of the

great body of surgeons who would be in Philadelphia at that time in attendance upon the Clinical Congress of Surgeons and the American College of Surgeons.

Six months has elapsed since this mobilization of the Unit in Philadelphia, and to date, April 12, 1917, the American Red Cross has completed organization of 36 Base Hospitals scattered throughout the country from coast to coast, representing 14 States, as follows:

New York	10
Pennsylvania	4
Illinois	4
Ohio	3
Massachusetts	3
Michigan	2
Missouri	2
California	2
Indiana	1
Maryland	1
Louisiana	1
Colorado	1
Wisconsin	1
Minnesota	1

In addition to the 36 Army Base Hospitals there have also been organized 5 Navy Base Hospitals, to be located at San Francisco, Los Angeles, Brooklyn, Philadelphia and Providence.

Within the last few weeks the exigencies of the war have made great demands upon us and America's declaration of war, combined with the personal appeal of the French and English War Commissions now in conference in this country, have decided the Government to mobilize its forces, military and Red Cross, and to send six of the Base Hospital Units to France at once, Base Hospital No. 4—the Lakeside Unit—being the first called for this service, and answering the call under the direction of Major Harry L. Gilchrist, of the U. S. Regular Army Medical Corps, with the following

Professional Personnel:

George W. Crile, 222 Osborn Bldg.....	Director
Charles F. Hoover, 700 Rose Bldg.....	Asst. Director
William E. Lower, 1021 Prospect Ave.....	Asst. Director Surg. Sec.
Richard Dexter, 615 Rose Bldg.....	Asst. Director Med. Sec.

Howard T. Karsner, Lakeside Hospital.....	Asst. Director Laboratory
Henry L. Sanford, 1021 Prospect Ave.....	Staff Surgeon
Harold K. Shawan, Detroit, Mich.....	Staff Surgeon
Thomas P. Shupe, 1021 Prospect Ave.....	Staff Surgeon
Walter B. Rogers, Lakeside Hospital.....	Staff Surgeon
Allen Graham, Lakeside Hospital.....	Staff Surgeon
Benjamin I. Harrison, Mt. Sinai Hospital.....	Staff Surgeon
Drury Hinton, Lakeside Hospital.....	Staff Surgeon
Samuel Brock, Lakeside Hospital.....	Staff Surgeon
Gordon N. Morrill, Rose Bldg.....	Orthopedist
Chester B. Christie, Lakeside Hospital.....	Staff Physician
Herbert B. Weihrauch, Lakeside Hospital.....	Staff Physician
Harry V. Paryzek, Lakeside Hospital.....	Staff Physician
Marion A. Blankenhorn, Lakeside Hospital.....	Staff Physician
Arthur B. Eisenbrey, Rose Bldg.....	Bacteriologist
Walter C. Hill, 1021 Prospect Ave.....	Roentgenologist
William R. Barney, Lakeside Hospital.....	Registrar
Bertram S. Rothwell, 1019 Rose Bldg.....	Dentist
Alan MacLachlan, 10111 Euclid Ave.....	Dentist
William S. Sykes, 3794 West 25th St.....	Anesthetist

Sixty-five Nurses, 2 women Anesthetists, 2 Stenographers, and the Assistant Registrar, will form part of the personnel of the unit and one hundred and fifty enlisted men of splendid calibre for the various clerical and mechanical positions necessary to the carrying out of the work of the group.

The Lakeside Unit left Cleveland, May 6, 1917, and at the present time is being transported to an English Base Hospital "somewhere in France" to take over such hospital (composed of five hundred to two or three thousand beds), thereby releasing for service nearer the line those English physicians now in charge.

Red Cross Ambulance Company, No. 4—Western Reserve Unit

In addition to the Base Hospital No. 4, Lakeside Unit, which is en route to France, there is now being organized a Cleveland Ambulance Corps, to be known as Red Cross Ambulance Company, No. 4. The War Department has detailed Major Robert U. Patterson, the Director of the Bureau of Medical Service, Department of Military Relief, to assist Colonel Kean in the organization of these Red Cross Units.

Based on the authority of the Act of Congress, July 24, 1912, the War and Navy Departments have definitely stated the char-

acter of the assistance they desire to receive from the Red Cross in the event of war. Their instructions require the Red Cross to form a number of different kinds of organizations, such as Ambulance Companies, Base Hospitals, Hospital Units, Surgical Sections, Sanitary Training Detachments, etc.

The functions of Red Cross Ambulance Companies correspond with those of Evacuation Ambulance Companies of the Regular Army, which, according to the Manual of the Medical Department, 1916, are as follows:

"1. The primary function of the Evacuation Ambulance Company is the evacuation of Field Hospitals and the transportation and care of patients enroute therefrom to evacuation, base or other hospitals on the line of communications, or to points with train or boat connections for rail or water transport to such hospitals." (Par. 807.)

"2. On the march the company will be brought up to clear field hospitals of patients collected by the latter (Par. 700), and to take them to points on the line of communications." (Par. 808.)

"3. At the proper time or times during or after the battle, each company, under instructions given therefor by the surgeon, advance group, will proceed to the field hospitals which it is to evacuate, will report to the commanding officers thereof, will receive the patients who are to go to the rear, and in due course will deliver them to the Medical Department organization which is designated for their further care."

"(a) The evacuation ambulance company will receive and provide for all patients turned over to it by a field hospital." (See Par. 706.)

"(b) It will also receive and provide for the slightly wounded, able to walk, who report to it by proper authority from the dressing stations, the station for slightly wounded, or other places on the field." (Par. 811.)

"4. The assignment of the sick and wounded to the various kinds of transports (automobiles, ambulances, wagons, country carts, bearers, etc.), will be made by the commanding officers of the company according to their condition. In doubtful cases the authorities of the hospital should be called upon for necessary information." (Par. 812.)

Ordinarily, Red Cross Ambulance Companies will be used to supplement and assist similar organizations (Ambulance Companies and Evacuation Ambulance Companies) of the Regular Army in the transportation of sick and wounded from the zone of the advance (the front) to hospitals along the line of communications as far back as the base. However, while their duties are mainly to furnish transportation for patients, the personnel may be used in whole or in part to man hospital trains, hospital ships, or, where the need is great, emergency hospitals. "Whenever required along the lines of communications, "rest stations" may also be operated by detachments detailed from ambulance companies.

As naval forces will only take part in land operations in exceptional circumstances, it is not necessary to organize ambulance

companies for that service. In such instances the sanitary transportation organizations of the Army will care for the sick and wounded of both services.

An ambulance company consists of the following officers and subordinate personnel:

- 1 Captain
- 4 1st Lieutenants
- 1 1st Sergeant
- 11 Sergeants
- 5 Mechanics
- 2 Cooks
- 2 Assistant Cooks
- 20 Chauffeurs
- 2 Musicians
- 43 Privates

91 Total

As soon as 75 per. cent of the subordinate personnel has been enrolled, equipment "A" obtained, and instruction commenced, the organization will be inspected by a commissioned medical officer of the Army, and if found satisfactory will be reported for registration in the office of the Surgeon General of the Army.

Whenever an ambulance company is being formed in the vicinity of a Red Cross Chapter, it is the duty of the latter to raise the funds for the purchase of the equipment. The funds should be forwarded to National Headquarters, stating specifically the purpose for which they are intended. The purchase of supplies will be made either by the National Headquarters or the funds will be placed to the credit of one of the officers of the company, who will make the purchases and become a Red Cross disbursing officer, accountable to the Treasurer at National Headquarters.

While other persons may assist the company officers to obtain volunteers for enrollment in the subordinate positions of ambulance companies, their final acceptance rests with the captain of the organization. When appointed in the Red Cross service, Red Cross Commissions will be issued to the officers, and they will then be recommended to the Surgeon General of the Army for commissions in the Medical Section, Officers' Reserve Corps, U. S. Army, as captains and first lieutenants, respectively, under Section 37 of the National Defense Act of June 3, 1916.

The subordinate personnel of ambulance companies, however, will only be required to enroll in the Red Cross Service for a period of two years, and to promise to enter the service of the United States by enlisting in the Medical Department of the Army in the event of war. Under such circumstances the enlistment period will usually be for the duration of the war only.

By this arrangement, when ambulance companies are called upon for active service there will be little time lost changing from a Red Cross to a military status.

Applicants for enrollment in Red Cross Ambulance Companies must be between the ages of 18 and 45, and be able to meet the physical, educational and practical requirements which may be prescribed.

Under Section 55 of the National Defense Act it will be possible to enroll members of ambulance companies in the Medical Section Enlisted, Reserve Corps, of the Army if they desire such enrollment. Members so enrolled will be called upon to undergo a period of instruction in the field not to exceed 15 days annually during their enlistment period. The annual instruction requirement applies also to officers of the Medical Section of the Reserve Corps.

With regard to the organization of field columns, such rapid progress has not been made. There are no mother institutions in which field columns can be organized as are the base hospitals in existing civil hospitals, and so universities and colleges have been chosen to act in such capacity.

At the present time seven ambulance companies are being organized and equipped for service—one each from the following university centers:

Western Reserve University, Cleveland, Ohio.

Columbia University, New York.

Harvard College, Cambridge, Mass.

University of Chicago, Chicago, Ill.

University of California, Berkeley, Calif.

University of Lower California, Pasadena, Calif.

The Western Reserve University Unit—Ambulance Company No. 4—has not fully completed its organization, but Major Patterson is urging its speedy completion, as it is the intention to have this ambulance company follow the Lakeside Base Hospital as soon as possible to act as the field column in connection with it.

Fully 75 per cent of the men now enlisted in the subordinate personnel are Western Reserve men.

Dr. John C. Darby, for many months with the forces on the Mexican Border, has been the Cleveland man actively interested in the organization of the Ambulance Company, but he will be unable to go with the Western Reserve Unit at this time.

The personnel of medical officers so far as known at this writing will be:

Ralph K. Updegraff, Captain.

Harold O. Ruh, Lieutenant.

Joseph E. McClelland, Lieutenant.

Roy P. Forbes, Lieutenant.

At a personal sacrifice that we may do well to consider, these enlisted members of the medical profession of Cleveland in both Base Hospital and Ambulance Company are doing their utmost in behalf of suffering mankind—they are resigning posts as teachers, as laboratory and hospital workers, and as practitioners, many of them closing their offices with no promises for the future.

Those of us, who, for good reasons may not join them in this personal sacrifice can do no better work than to be their loyal supporters at home—generous in our thoughts and acts for both their present and their future welfare.

Cleveland is proud to have contributed its quota to bear the American flag abroad.

The Cleveland Chapter of the American Red Cross

Since we shall have in the field a Base Hospital and an Ambulance Company, it will interest us greatly to know some of the more intimate details in regard to the source of supplies for these units.

The Cleveland Chapter of the American Red Cross now has a splendid working organization the outgrowth of one year's training and work of volunteers, many of them with little or no experience at the start.

The Red Cross Headquarters occupy two residences on Euclid Avenue presented for use of the local Chapter during the period of the war—one is used for its Executive Offices—Surgical Dressing Room, and Sewing and Packing Room; the other is the Teaching Center where classes are held for instruction in First Aid, Ele-

mentary, Hygiene and Home Care of the Sick, Home Dietetics, Preparation of Surgical Supplies; Social Service and Relief for Soldiers' Families.

The workers are organized with Directors for each day, heads for each department and work room; each worker to supply her own substitute if unable to be on duty.

The supplies turned out are made according to standard rules, patterns, and regulations sent out from Washington Red Cross Headquarters and may not be varied to suit the individual worker. These supplies, while made for the present war preparedness, are of the same practical use in civil disaster and may be so stored and diverted upon the cessation of war.

The local Chapter has been working since July, 1916, and prepared the entire outfit for 500 beds which was sent with the Lakeside Unit, and has packed and ready for forwarding practically a duplication of the original outfit. Showing the generous terms in which the order for the Unit was filled, we give both the list of articles supposed to be required for such a Unit and the actual list as filled and sent with the Lakeside Unit:

	Articles Required	Articles Sent
Sheets	2,910	4,500
Pillow Cases	2,100	2,500
Pajamas	1,095	1,500
Surgical Shirts	660	1,500
Convalescent Gowns	525	550
Socks (Knitted)	1,380	1,380
Bed Socks	330	500
Bath Towels	1,050	1,500
Face Towels	3,060	3,500
Wash Cloths	855	855
Comfort Bags (other than officers')		150
Brassards		210

The following list of surgical supplies was four times the quantity stipulated in the requirements:

- 500 operating gowns.
- 200 operating caps.
- 200 operating helmets.
- 600 operating sheets.

2,000 towels.
200 pair leggings.
250 ice bag covers.
250 hot water bag covers.
500 ward slippers (mules).
500 shoulder bed wraps.
2,400 handkerchiefs.
2,400 substitutes for handkerchiefs.
2,250 napkins.
2,250 tray cloths.
6,000 surgical sponges (knitted) packed.
2,000 surgical sponges (knitted) to be packed.

It was estimated by Mrs. F. S. Burke, Jr., Chairman of the local Chapter, that this equipment can be duplicated, with a daily average of 150 workers, in about $4\frac{1}{2}$ months. At the present time there are 1,000 people enrolled in classes. All equipment, including telephones and switchboard are donated, and in the event of need, several Cleveland business firms have volunteered to turn out garments for the Chapter upon a large scale and at no cost.

We wish that space permitted us to list the names of all those giving their time, energy and money to this splendid cause, for we know how deeply all Cleveland appreciates the work being done by these members of the Red Cross.

Alpha Omega Alpha Prize Competition.—Pursuant of its policy of furthering medical education and stimulating work in the medical sciences, The Alpha of Ohio Chapter of the Alpha Omega Alpha has established a yearly prize competition to be known as the Alpha Omega Alpha Prize.

The Alpha Omega Alpha prize competition will be open to any man registered as a regular student in the Western Reserve University Medical School, in the year the prize is given or in the preceding year.

For the first year the prize shall consist of fifty dollars (\$50.00) in money.

New subjects will be announced yearly, but old subject shall remain valid for a period of three years.

Subjects for the present year are:

1. Historical development of some limited phase of medicine, e. g.:
 - (a) The Development of Gynecology as a Specialty.
 - (b) The Development of Pediatrics as a Specialty.
 - (c) The Development of the Art of Physical Diagnosis.
2. Biographical sketches restricted to American men of medicine, e. g.:
 - (a) Beaumont.
 - (b) Simms.
 - (c) Morton.
 - (d) Trudeau.
 - (e) Rush.

The essays must be in the hands of the chairman of the Prize Committee by October 1, 1917.

The judges for the first year will be:

Dr. J. D. Pilcher, Nebraska University, Omaha, Nebraska.

Dr. N. W. Ingalls, Western Reserve Medical School, Cleveland, Ohio.

Dr. V. C. Rowland, Cleveland, Ohio.

1. The essays are to be typewritten in English.
2. The essays must contain not less than 3,000 or no more than 10,000 words exclusive of tables. They must be original and not previously published. They are to be the property of the Prize Committee. In case of a tie splitting of the prize shall be permitted.
3. Free consultation with the instructors of the Medical School shall be permitted and encouraged. Winning of the prize in no manner obligates the society to elect to membership.
4. The following points will be observed in judging the essays:
 - (a) Form, technique and arrangement.
 - (b) Composition, logical sequence and arrangement of paragraphs.
 - (c) English, construction of sentences, choice of words, etc.
 - (d) Scope of the paper, evidences of originality, grasp of subject and breadth of viewpoint.
 - (e) Bibliography and accuracy of references.
5. Essays must not be signed with the true name of the writer, but are to be identified by a nom de plume or distinctive device. All essays are to reach the chairman of the Prize Committee on or before October 1, 1917, and are to be accompanied by a sealed envelope marked on the outside with the fictitious name or device assumed by the writer and to contain his true name inside.

The members of the Prize Committee are: Dr. H. O. Ruh, chairman; Prof. N. W. Ingalls and Dr. Clyde L. Cummer.

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Reprints of articles will be furnished authors at a reasonable price.

All remittances to the Journal should be made payable to The Cleveland Medical Journal.

Short notes upon clinical experiences or reports of interesting cases will be welcomed by the editors.

Original articles are accepted for publication by this Journal only with the distinct understanding that they are contributed solely to this Journal and will not be published elsewhere as original.

EDITORIAL

"PUNISHING PATRIOTISM."

This caption appears over an article in the *Journal of the American Medical Association*, which we reprint immediately after the editorial. It calls attention to a vital question, the economic side of a physician's service for his country. If the army which is desired by the President is raised, it has been estimated that the

quota of medical officers required from this district will be 200 men. The majority of this number will enter service as first lieutenants. Many of the physicians enlisted will be men to whom families look for support, and the salary paid by the government will be none too ample to maintain a family at war-time prices, to pay rent of an unused office in case the lease cannot be vacated, to meet life insurance premiums, and to furnish the officer his living, since he must provide his own mess and uniforms.

The scheme proposed by the Maryland State Committee on Medical Preparedness would accomplish three desirable objects. Primarily it would add materially to the income of the medical man absent on duty. Of equal importance, it ensures the return of his practice to him, as far as this may be done. Then it permits the practitioners who are unable to accept a commission to do something for their brothers at the front and, indirectly, for their country. The method could evoke no criticism on ethical grounds, since the "division of the fee" would be published to all parties, and it would appear to be within the letter of the state law bearing on this subject. Certainly it is within the spirit. We urge upon the Council of the Cleveland Academy of Medicine earnest and early consideration of this or a similar plan. Let every physician have a welcome opportunity "to do his bit."

"PUNISHING PATRIOTISM: A SUGGESTED METHOD OF MEETING THIS EVIL

Undoubtedly in the past civilian doctors who have been patriotic and who have served their country in the army or navy have been in a measure punished for such service by finding their practice dissipated and gone on their return home. The knowledge of this has naturally acted in preventing many a physician entering the Officers' Reserve Corps of the United States at this time.

To meet this situation the Maryland State Committee on Medical Preparedness, of which Dr. Gordon Wilson, Baltimore, is secretary, has devised the following plan to be presented at the annual meeting of the state society (Medical and Chirurgical Faculty), to be held in April.

This plan has already been endorsed by the Baltimore City Medical Society.

The Committee proposes to have offered the following resolutions:

1. *Resolved*, That the Medical and Chirurgical Faculty of Maryland recognizes the patriotism of those members of the medical profession resident in Maryland who volunteer for the service of the U. S. Government, and in appreciation of this we recommend that should these members of the profession be called into active service, the doctors who shall attend their patients should turn over one-third of the fees collected from such patients to the physician in active service or to his family.

2. *Resolved*, That the secretary of the society shall have prepared letter blanks according to the form attached, to a number sufficient to supply those physicians who are called into active service, with a sufficient number so that they can send a filled-out form letter to each patient, a carbon copy going to the doctor who has agreed to look after the physician's practice, and a second carbon copy to be sent to the secretary of the state society.

The Secretary of the State Society is instructed to file the carbon copies received by him, and on notification by a physician that he has terminated his service with the government and has resumed his practice, the Secretary of the State Society shall then send out to each of the patients of this physician, whose names and addresses he has received in the filed letters, a letter stating that the physician has resumed the practice of medicine, and requesting the patient in the name of the society to recognize the physician's patriotism by summoning him should he be in need of medical attention.

This method is the only one devised which can in any way meet the situation that confronts the physician who is patriotic, and who is penalized for his patriotism by the loss of his practice. By this method the profession at large is "put on its honor," the patients of the physician are urged to retain his services, and this urging is done, not in the physician's name, but in the name of the profession and as a patriotic duty.

It is proposed, should these resolutions be adopted, to send a description of the plan to every member of the profession, a copy of the form letter, and also two cards, one to be signed by the physician endorsing personally the first resolution, and the other an application for admission to the Medical Officers' Reserve Corps.

Below are specimens of the proposed form letter and two cards.

Proposed Form Letter

(Regular Letter-head of Medical and Chirurgical Faculty.)

M.....

Street.....

Post-office.....

Dear M.....: As a member of the Reserve Corps of the United States Army (Navy), I have been ordered into active service by the Government, and on that account I am writing to you of this fact, so that, in case of illness, you may summon some other doctor to attend you. In my absence Dr....., of, telephone No., has kindly consented to attend my patients, and I can heartily recommend him.

Sincerely,

.....

Resolution Adopted by Medical and Chirurgical Faculty of Maryland:

"Resolved, That the Medical and Chirurgical Faculty of Maryland recognized the patriotism of those members of the medical profession resident in Maryland who volunteer for the service of the U. S. Government, and in appreciation of this we recommend that should these members of the profession be called to active service, the doctors who shall attend their patients should turn over one-third of the fees collected from such patients to the physician in active service or to his family."

Please present this letter to any doctor whom you may call to attend you.

Cards

I agree to abide by resolution adopted in relation to fees for attendance on patients of doctors ordered into active service for the government.

In the remote chance of misunderstanding or disagreements arising under this resolution I agree to submit the facts to the Board of Censors of the society and abide by their decision.

(Signed)

Reserve Corps

I hereby make application for appointment to membership in Reserve Corps of U. S. Army
Navy

(scratch out one).

(Signed),

Address....."

Date.....

Dr. E. R. Baldwin Will Talk on "Latent Tuberculosis: Its Importance in Military Preparation."—The local chapter of Alpha Omega Alpha, the honorary society holding the same position in medical schools which is held in literary colleges by Phi Beta Kappa, announces that it has secured Dr. E. R. Baldwin, of Saranac Lake, to deliver its annual oration. This will be given at the Medical School building on Monday afternoon, May 14, at 4:30 P. M. The society invites all the members of the medical profession to attend. Dr. Baldwin was long the co-worker and intimate friend of the beloved Dr. Edward L. Trudeau, and is now in charge of the Saranac Lake Laboratory. Dr. Baldwin's subject, Latent Tuberculosis: Its Importance in Military Preparation, is especially timely, and his long experience and scholarly attainments assure an adequate presentation.

ABSTRACTS

ABSTRACTS OF MEDICINE

Further Studies on Typhoidin. John N. Force and Ida M. Stevens,

Arch. Int. Med., 1917: XIX: 440

The authors report further studies on typhoidin. A stable preparation may be rapidly prepared by precipitating a concentrated broth culture of typhoid bacilli with 95 per cent alcohol, which is then dehydrated with absolute alcohol and ether and preserved in the dry state. A 1 to 10,000 suspension of typhoidin in saline solution to which 0.5 per cent of phenol has been added is made; .05 c.c. of this suspension, when injected intradurally, produced definite reactions in human beings. Similar reactions in immunized rabbits were produced by 0.1 c.c. of a 1 to 1,000 suspension of typhoidin. No attention should be paid to the appearance of the reaction at the end of 24 hours. A positive typhoidin reaction shows a well defined erythematous papule at least 5 mm. in diameter at the end of 48 hours. Out of 108 reactions the 48-hour papule measured 10 mm., or more in 26 instances. Out of 18 normal persons 17 gave negative reactions; out of 26 persons with a history of typhoid fever, 19 gave positive reactions, one gave a doubtful reaction, and six gave negative reactions. Out of 152 persons previously vaccinated against typhoid, 62 gave negative reactions. The more recent was the vaccination, the higher was the proportion of positive reactions. In 10 instances individuals, giving negative reactions before vaccination, gave positive reactions after vaccination. In many cases the routine administration of three doses of typhoid vaccine is not sufficient to produce sensitization to the typhoid protein and presumably, therefore, is not enough to protect against typhoid fever.

R. D.

Remissions in Leukemia Produced by Radium in Cases Completely Resistant to X-ray and Benzol Treatment. Thomas Ordway, *Boston M. & S. J.*, 1917: CLXXVI: 491.

Ordway reviews the methods of administering benzol, X-ray and radium in leukemia. Not all cases react favorably to the benzol treatment, and some of those which do improve relapse immediately after the treatment is discontinued. The X-ray fails to cause improvement in from 50% to 80% of the cases. The author believes that too little attention has been given to the principles of cross-fire and filtration in the X-ray treatment. The principles of cross-fire as well as of filtration may be applied in the use of radium over the enlarged spleen or leukemia. A detailed description of the method of applying the radium is given. The writer applies the radium only over the spleen; he does not expose the long bones, as is so frequently done in X-ray treatment. The surface application of radium as described by the author produces remarkable diminution in the size of the spleen, marked changes in the blood picture and great improvement in the general condition. In a few weeks or in three or four months the spleen returned to normal size; the white cells in the blood were reduced from 500,000 to 6,000; the hemoglobin increased from 60% to 90%; the red blood corpuscles also were increased to normal. The return to a condition of apparent normal health is not infrequent. Some of the patients treated with radium have been followed for a number of years and have been kept in good condition by an occasional repetition of the treatment.

Interesting changes are found in the urine of cases of myelogenous leukemia treated with radium. A marked increase in the total nitrogen, urea nitrogen and ammonia nitrogen is found. Uric acid is slightly increased. The total phosphates are greatly increased. The author believes that during the treatment the patients should be on a purin-free diet because

of the marked increase in the metabolism. Many cases that have proved refractory to the X-ray or to benzol react well to the radium therapy. Though the results of radium treatment are most marked in chronic myelogenous leukemia, in certain cases of lymphatic leukemia the results are excellent. While the radium treatment cannot yet be considered definitely curative, it is the best method of controlling leukemia which we have at present. The article contains a very complete report of a case which illustrates the effect of the treatment in a patient refractory to the other therapeutic methods.

R. D.

Trench-foot. H. M. Frost, *Boston M. & S. J.*, 1917: CLXXVI: 301.

The writer describes a peculiar affection of the soldier's foot known as trench-foot. It occurs from December to March. The condition differs from frost-bite in that it usually occurs when the temperature is above the freezing point. Cold, wet, localized pressure and inactivity contribute to cause the condition. The condition is so common as to be of considerable importance in the invaliding of soldiers on duty on the western front. Of the cases observed by the author, the average length of illness was 22 days. Both feet are usually involved. After exposure to cold and wet the feet become numb and cold. This is followed by swelling, which may continue for several days. Then pain and tenderness in the foot develops, which may make walking impossible. The pain may be of a tingling or burning character. It may involve the joints in the rheumatic type. Tingling and prickling may extend to the legs; the neurotic type. The amount of exposure necessary to bring on an attack varies with the individual. The skin of the foot may be simply hyperemic in the areas of greatest pressure. The foot is usually anesthetic to touch and pin prick. Hyperesthesia may occur. Another type is characterized by pallor of the foot with extreme hyperesthesia of the skin. In the more severe cases the discoloration is very marked and is associated with edema. Blebs and even ulceration may be present. The more severe types may go on to gangrene. The pain in the advanced cases is very acute. Occasionally muscular paralysis is present. That this condition is different from frost-bite is evidenced by the absence of frost-bite on the ears, nose or fingers. The author believes that the factors which produce trench-foot are as follows: (1) A moderate degree of cold, which reduces the resistance of the tissues. (2) Wet, which accentuates the chill of the parts, and also further constricts the parts by causing the shoes and puttees to swell. (3) Inactivity, often in a cramped position, which retards the circulation.

The treatment is simply rest, elevation and protection. Usually the pain gives over to local applications, but it may be severe enough to require the hypodermatic administration of morphine.

R. D.

Jaundice of Infective Origin. Bertrand Dawson and Wm. E. Hume, *Quart. J. Med.*, 1917: X: 90.

The article is based on the study of 178 cases of jaundice occurring among soldiers on the western front in Europe during a period of nine months. These cases fall into three groups: (a) Spirochaetal jaundice or Weil's disease. (b) Enteric jaundice (typhoid and paratyphoid). (c) "Catarrhal" jaundice (including some intermediate forms).

Spirochaetal Jaundice.—Spirochaetes were obtained in the urine from the majority of the cases in group A. Together with the characteristic clinical symptoms these cases are no doubt identical with those recently reported by a group of Japanese workers in the *Jour. of Exp. Med.*, March, 1916. In some cases the onset was gradual, in others sudden. The symptoms were those of an acute febrile illness, with great prostration, often

associated with conjunctival injection and herpes. Jaundice appeared from the second to the seventh day after the onset of illness, first in the conjunctivae and rapidly spread over the trunk and the limbs. The liver was generally enlarged and tender, but the spleen was seldom palpable. The fever ran a somewhat irregular course. After the initial rise it remained elevated for 7 or 8 days, then became normal, and remained so for 4 or 5 days. In some cases there was a secondary fever of several days' duration. Convalescence began after from 17 to 20 days. Three cases are recorded in which jaundice never developed, although spirochaetes were demonstrated in the urine. The most conspicuous lesion found at autopsy in the fatal cases occurred in the duodenum. The mucous membrane was very edematous and congested; its color was dark blue, resembling a blue plum. The opening of the bile duct was swollen and edematous. An interesting feature is that in three fatal cases there was no definite anatomical change in the liver, therefore the cause of the jaundice cannot be sought in the liver. The writers suggest that a probable explanation for the jaundice is to be found in the obstruction caused by the swollen papilla; this may be intensified by the increased viscosity of the bile, which was a noticeable feature in some cases. They also point out that fatal jaundice can exist sometimes associated with no definite and at other times with very definite liver changes. "The patient dies from the general infection of which jaundice is an incident and the liver changes one of the consequences."

Enteric Jaundice.—Under this head are considered the cases of jaundice complicating typhoid and paratyphoid fever. Twenty-six such cases occurred and they are divided into two groups—one in which the jaundice occurred before the 10th day, and the other in which it occurred later in the disease. Six of the cases were due to typhoid and eighteen cases were due to paratyphoid. The authors conclude that the jaundice is due to an inflammation resulting from the localization of the infection in the duodenum.

Catarrhal Jaundice.—All the other cases of jaundice in which the bacteriological examinations were negative were classified as catarrhal jaundice.
R. W. S.

The Recent Epidemic of Infantile Paralysis. Haven Emerson, *Johns Hopkins Hosp. Bull.*, 1917: XXVIII: 131.

During the latter half of 1916 there were 24,000 cases of infantile paralysis in the United States, 18,000 of which were in New York City and the adjacent territory. Cases developed irrespective of sanitary conditions. The earliest symptoms seen were fever and irritability—the child unwilling to be fondled by its mother. Cases were divided into two classes: those accompanied by paralysis; and those without palsy. There is only one way at present to diagnose the latter group—by lumbar puncture with examination of the spinal fluid. The fluid is rarely turbid, but is under pressure, there is an increased cell count and an increase in the globulin. In New York City as a whole the mortality was 26.96 per cent. In the State of New York, excluding the city, the death rate was 21 per cent, which is uniformly higher than the death rate in previous epidemics. Lumbar puncture was found to be the most valuable therapeutic measure. Warm baths and warm applications relieved the pain in the extremities. Rest in bed, symptomatic relief, and passive support for the prevention of deformities comprised the routine treatment. The quarantine period in New York was eight weeks, during which time massage should not be used. Three hundred and fifty cases were treated with the serum of cases which had recovered; no conclusions have as yet been drawn from its use. Death was caused by the failure of respiration in 98 per cent of the cases. A number of cases died after a prolonged period of unconsciousness and exhaustion. It is interesting to note that no doctor or nurse, either in the field

or in the hospital service, developed the disease during the entire time of the epidemic in New York. It was concluded that the disease was spread by personal contact. The incubation period was less than two weeks, perhaps most often between three and eight days. The precautions which should be taken are: (1) Prompt report of all cases; (2) isolation in screened premises for a period of from six to eight weeks; (3) disinfection of all body discharges; (4) so far as possible, restriction of the movements of the intimate associates of the patient, including the exclusion of children of the family from school and other gatherings; (5) protection of children so far as possible from contact with other children or with the general public during epidemics; (6) observation of contacts for two weeks after exposure. No case was reported which developed a second attack of the disease. There was no difference in the racial evidences of the disease and there was no evidence of the disease as an epidemic in the schools.

H. S. F.

The Effect of Soap on *Trepnoema Pallidum*. Mathew A. Reasoner, *J. Am. M. Ass.*, 1917: LXVIII: 973.

The author remarks that extra-genital lesions obtained innocently through barbers' utensils or manipulations are relatively rare, though the preventive measures ordinarily are not "such as would disturb the equanimity of the ordinary domesticated bacterium or spirochete." It has been shown, however, that the organisms will live eleven and a half hours on wet towels at room temperature when exposed to the sunlight.

The author obtained testicular juice rich in spirochetes from infected rabbits and mixed it in equal parts with solutions of well-known shaving soaps. A drop of the mixture was placed on a slide and examined with a dark field illuminator. From 15 to 30 seconds were required for the manipulations. When examined, no motile spirochetes were seen. Adequate controls were made. Reasoner concludes that the organisms of syphilis will not live in the presence of a solution of soap of even a considerable degree of dilution, and that a lather such as is used in shaving, is sufficient to cause the death of the organisms when brought in contact with them. He suggests that lesions ascribed to the barber may have been transmitted by an infected towel or that a skin with many minute abrasions offered a point of entry for infection from other sources after shaving.

C. L. C.

The Selective Action of Spirochetes. Morris Grossman, *J. Am. A. Ass.*, 1917: LXVIII: 963.

As evidence confirming the impression that there are strains of spirochetes with selective property for certain tissues, Grossman gives the history of a family of which the father had spastic hemiplegia and later developed paresis, the mother had failing vision with unequal and irregular pupils, which reacted sluggishly to light and accommodation, while of the four children the first, second and fourth had widely dilated pupils, which were unequal in size, irregular in outline, and did not react to light, accommodation, convergence, or physostigmine. The mother gave a positive blood Wassermann reaction and positive reactions were obtained with all the children after treatment had been administered. Both mother and children gave positive results with the spinal fluid. The author calls attention to the fact that the ophthalmoplegia interna is a rare condition, which may be familial and may be the only sign of congenital syphilis of the central nervous system. He felt that in his cases the condition was due to a strain of spirochetes probably possessing a selective property for nerve tissue.

C. L. C.

Salvarsan and Neosalvarsan in Syphilis. Oliver S. Ormsby, *J. of A. M. A.*, 1917: LXVIII: 949.

A brief review is given of the development of salvarsan therapy. Then follows a consideration of the reactions, the author stating that reactions occur in 5 to 15 per cent of all injections of neosalvarsan and in a somewhat higher proportion of cases where salvarsan is used. The majority of the reactions are of minor significance. Untoward results do occur. Deaths have been explained on various grounds, intolerance of the drug, a cerebral Herxheimer reaction, hypoalkalinity of the solution, errors of technic, and anaphylaxis. In a consideration of the cases in the literature, it is seen that faulty technic in the use of unsuitable water accounted for much trouble. Anaphylaxis does not seem a reasonable explanation, since the statistics of Leredde showed 104 deaths in the literature following first injections and only three subsequent to the fourth injection. Ormsby also directs attention to the fact that various lots of salvarsan may vary in toxicity and cites his own experience to prove this point.

In summing up the present-day feeling regarding contraindications it is stated that few of the original contraindications have remained as such, though organic changes in any of the viscera indicate the need for care. In all cases, the patient should be safeguarded by the employment of correct technic, which includes the use of freshly distilled and sterilized water, sodium chlorid, and sodium hydrate. The initial dose should be small, and the patient should be prepared for treatment by catharsis and limited diet.

While a definite course of treatment cannot be outlined, it is stated that the method employed by Ormsby is perhaps an average of that used in various parts of the world. He divides his treatment into courses of from 5 to 8 injections of salvarsan and 12 to 20 injections of mercury, or the equivalent of the latter in inunctions. The interval between salvarsan injections is 7 to 14 days. Mercurial injections are given every two days with a solution of salt, or weekly with an insoluble salt. In the primary stage, salvarsan is used first. One course is usually sufficient. In active syphilis, mercury precedes salvarsan to prevent neuro-recurrences. Three courses are given. If the Wassermann reaction is then negative for a year, a pre-vocative is given. When this is negative and the spinal fluid is also normal, a prolonged rest is given. In tertiary and latent cases, several courses are given, if needed, together with potassium iodide. In central nervous system syphilis, intravenous salvarsan and intramuscular mercury precedes intraspinal treatment.

In comparing the value of salvarsan and neosalvarsan, it was the impression of the author that salvarsan was ultimately more efficient than neosalvarsan. Clinically little difference is noted, but serologically, salvarsan appears more efficient. However, salvarsan is more difficult to give and is followed by more reactions.

C. L. C.

The Nutritional Value of the Banana. Victor C. Meyers and Anton R. Rose, *J. Am. M. Ass.*, 1917: LXVIII: 1022.

The banana has a higher caloric value than any other common fruit. Unlike other fruits, it has the advantage of being always in season. When fully ripe, and when the starch has been converted almost completely to sugar, the authors' experiments show that its carbohydrates are well absorbed from the intestine. The gastro-intestinal disturbances attributed to eating bananas are probably due to the consumption of unripe fruit. In the authors' work, there were no ill-effects or discomfort after the use for several days of large quantities of the ripe fruit. The composition of the banana and the potato shows similarity both in total carbohydrate content and the amounts of different mineral constituents. While not a potato substitute, the banana has practically the same caloric value. Bananas may

be eaten uncooked. This is of especial interest in view of the increasing significance which is being attached to thermolabile "accessory food substances." The banana would appear to be a particularly valuable food to employ in the dietetic treatment of nephritis patients showing nitrogen retention. Very satisfactory results were obtained in the rather mild cases reported.

C. L. C.

Puncture Headache. Charles L. Dana, *J. Am. M. Ass.*, 1917: LXVIII: 1017.

Headache following lumbar puncture is so common and its cause so well recognized that the term "puncture headache" has become a colloquialism in the hospitals. The headache rarely begins until the day following puncture, when the patient is allowed to get up. The pain may be accompanied by nausea and even by violent vomiting, and also with some giddiness, mental confusion, and faintness. The symptoms are increased by active exercise and are usually promptly relieved by lying down. The condition lasts with remissions for from five to six days to two or three weeks. The symptom is more common in patients whose cerebrospinal fluid is negative, and in whom it comes out under low pressure. As matters go in a hospital, there is no headache in about one-half the cases unless the patient is allowed to get up early. Usually headache can be prevented by keeping the patient in a horizontal position for three or more days. Dana advances as an explanation that the puncture either inhibits the activity of the choroid plexus, or causes some block in the normal flow.

C. L. C.

ABSTRACTS OF SURGERY

The Operative Treatment of Hydrocephalus: A Preliminary Report of Forty-one Patients. William Sharpe, M. D., *Am. J. M. Sc.*, 1917: CLIII: 563.

Sharpe has devised a method of drainage in hydrocephalus by inserting strands of silk into the lateral ventricles, the outer ends being buried in the subcutaneous tissues in the temporal region. The details of the operation are reserved for future publication. The basic theory of the procedure is that the silk threads will be gradually absorbed in some six months, and that in the meantime the channel in which they lie will become lined with endothelial or epithelial cells. He presents no autopsy findings nor experimental results which unequivocally prove that the canal will remain patent.

Clinically, the results of the operation have been as follows: Of 41 cases, 28 are living; all but 6 of these have improved. Five have improved mentally and physically in every way, all of these being operated within one year after birth. Seven patients, unable to walk before operation, are now walking with difficulty. Optic disc changes with visual impairment, if not complete, have been improved.

Without the details of the cases at hand, and without comparison with a similar group of unoperated cases, the reviewer cannot refrain from the thought that these results may be spontaneous.

Sharpe makes the point that the condition of hydrocephalus is rarely limited to the ventricles alone, but, on the contrary, the condition is most frequently due to lessened excretion of the cerebrospinal fluid through the subarachnoid cranial and spinal veins, the sinuses, etc., so that hydrocephalus externa is developed. Hence the method of drainage must care for this latter and more frequent condition.

Excluding cases of internal hydrocephalus due to tumor or cyst formation in the posterior mid-brain and subtentorially producing direct pressure blockage of the ventricles, it is Sharpe's belief that practically all cases are

the result of a diffuse meningitis. Hence the frequency of external hydrocephalus, either alone or combined with internal hydrocephalus. The frequency of associated spina bifida (in 35 per cent of cases of hydrocephalus), and that it is almost never associated with the pure internal type, emphasizes the view of early meningeal inflammation with general blockage of the flow of the cerebrospinal fluid, thus causing an increased intradural pressure with the hernial protrusion of a spina bifida before the lumbar spine is closed. Again, it has been frequently observed, following the repair of a spina bifida, especially within a few days after birth, that a marked enlargement of the head occurred. It seems as if the removal of the hernial sac of the spina bifida might have lessened the excretory surface sufficiently to cause an accumulation of cerebrospinal fluid, the ensuing increased pressure causing an external hydrocephalus.

C. H. L.

Operative Treatment of Injury of the Peripheral Nerves. J. Renfrew White, *Brit. M. J.*, 1917: I: 388.

All wounds caused by the present-day projectiles must be regarded as infected. Nerve injury complicated by sepsis is not followed by that degree of regeneration of nerve fibres, and of re-establishment of conductivity which we designate clinically as "recovery." The cause lies in the excessive scar produced by the infection. Early operation on the nerve, before the infection has disappeared, will only spread the pathological processes already present. It is generally admitted that the mere external healing of a wound gives no very dependable assurance, at any rate for some time, that micro-organisms are not latent in the tissues. On the other hand, it is well recognized that secondary suture of nerve should be carried out as soon as possible, as the elapsed time affects the degree of ultimate recovery. One is forced to compromise between the opposing desirables and consideration must be given to the depth and extent of the original wound, the amount and character of the suppuration that ensued, the length of the period of healing, the presence in the tissues of foreign bodies, the presence or absence originally of bony injury, necrosis, or caries.

Complete division of the nerve may be anatomical or physiological; which it may be is generally not diagnosable before operation. If the diagnosis cannot be made, or if complete anatomical division is certain, operation is indicated. When it is known that the lesion is physiological, operations should not be delayed beyond the period of healing if the signs have not regressed to clinical incompleteness.

Operation may be indicated in incomplete division for one or more of the following causes: where an incomplete lesion remains stationary after the wound has healed soundly and the disability remaining is serious; where the clinical signs are increasing in severity; where, after some improvement, serious disability remains, *e. g.*, paralysis of important muscles, or extensive sensory loss in the foot or hand; finally, because of persistent pain.

The chief objects of operative procedure may be summed up as follows:

1. Where the division is physiological, the removal of scar tissue or other agents preventing regeneration; where the division is anatomical, the procuring of physiological connection between the two ends; where the length of hopelessly damaged nerve is great, the connecting of the distal end to some neighboring sound nerve.

2. The protection of the suture line from the fibrous ingrowth, secureable by rigorous asepsis and by absolute hemostasis.

3. No further damage should be inflicted by rough handling.

In complete anatomical division it is very desirable to excise the bulbous ends. Where the division is physiological and the pathological,

condition one of interstitial fibrosis, with spindle-shaped swelling, it is best to stretch the nerve, excise the spindle and suture the cut ends. Where there is a section completely fibrosed, excision is imperative. Where the division is physiological and due to strangulation by scar tissue, callus, etc., these must be carefully removed.

C. H. L.

The Relation of Radiography to the Diagnosis and Therapy of Non-tuberculous Diseases of the Lungs and Pleura. Howard Lilienthal, *Med. Rec.*, 1917: XCI: 587.

The author writes of his clinical experience.

Though the ribs aid in localization, it would be more desirable if some method of outlining the bronchial distribution could be invented. Radiography is the corner-stone of modern endothoracic surgery. The roentgenologist should be given the history, physical signs, and pathological phenomena to interpret the plates. It has been his custom to check up the X-ray findings by bronchoscopy. In cases of purulent pleurisy, Lilienthal always examines the plates and advises against diagnostic puncture till the patient is also prepared for operation. The X-ray has saved him from opening through a sacculated empyema into the clean pleural cavity. "Instead of contenting myself with the old-fashioned and non-progressive routine rib resection with its 20 per cent or more of secondary thoracoplastic operations, I do not, as a rule resect in general empyema, but make a long intercostal incision, spread the ribs wide apart, explore the entire pleural sac and shape the operation to fit the case."

The X-ray has been of service also in pus collections adjacent to the heart and in showing pulmonary metastases. Of seven cases of non-tuberculous pulmonary suppuration who underwent resection of a lobe, four are well and three died.

A. S.

Roentgenography of the Lungs. C. A. Waters, S. Bayne-Jones and L. G. Rowntree, *Arch. Int. Med.*, 1917: XIX: 538.

Injections of 10 gm. of finely-divided, silk-screened, chemically-pure iodoform in 100 c.c. of olive oil were made into the trachea through a catheter. Twenty-two living dogs were used. The safe dose was found to be 4 c.c. per kgm. of body weight. The investigators were able to demonstrate the entire bronchial tree, also the alveoli and bronchioles. The mortality was approximately 25 per cent. The hope is expressed that the method may be developed for use in man. Photographs of the X-ray plates accompany the article.

A. S.

ABSTRACTS OF NEUROLOGY

A Case of Hypopituitarism, with Hononymous Hemianopsia (Suprasellar Cyst?), Completely Relieved by Grandular Treatment. C. L. Elsberg and E. F. King, *Arch. f. Ophth.*, 1917: XLVI: 97.

As the surgical treatment of lesion of the hypophysis are generally unsatisfactory, the author believes that results obtained by other than surgical treatment are especially worthy of consideration.

The patient in point was a young woman; she complained of trouble with her vision. Three years previously her parents noted that she was not as bright as she had been and slept more than usual. Two years later, after a mild attack of typhoid fever, she had excessive thirst and polyuria. For three months she had much headache, had become very irritable, and was very constipated. For several weeks she noticed that she could not see well.

The patient was under-developed and did not look her age. The breasts were large, but contained little glandular tissue. The pubic hair was scanty and there was no hair in either axilla. Systolic blood pressure 90. The fundi showed nothing definitely abnormal. The visual fields showed bitemporal hemianopsia and a decided contraction of the entire visual fields. The patient was given pituitary gland for one month, but grew steadily worse. A subtemporal decompression was performed. A moderate increase in intracranial pressure was noted. Definite improvement in the visual fields resulted and she was discharged.

Two weeks later she was re-admitted to the hospital in a deplorable condition. She was pale and weak, extremities cold and cyanotic, and there were frequent attacks of syncope. The vision was so poor it could not be tested. The pupils were widely dilated and did not react to light.

Treatment with pituitary extract was resorted to, one cubic centimeter being given each day by hypodermic. Striking improvement was evident after two days. In a week she was out of bed. After eight weeks she had gained considerable flesh and strength; her color was good; pulse was strong and she felt subjectively well. The visual field showed only a moderate contraction of the temporal sides. The vision subjectively was normal.

Dr. Elsberg's comments on the case are of interest. The history would indicate a case of pure glandular insufficiency were it not for the eye-changes. There was little increased intracranial pressure, which, together with the slight improvement after operation, showed the symptoms were due to glandular insufficiency rather than increased pressure.

The small sella tursica and normal clinical processes also point to a condition of glandular deficiency and cyst formation. The striking improvement after pituitive treatment proved the condition to be one of cachexia hypophyseopriva. The recovery of the visual disturbance would indicate that the treatment caused the secondary cysts to be absorbed. Several such cases have been reported in the literature. This case would indicate that a thorough course of treatment with glandular extracts should precede operation interference.

T. S. K.

The Factors which Govern the Penetration of Arsenic (Salvarsan) and Aniline Dyes into the Brain and their Bearing upon the Treatment of Cerebral Syphilis. James McIntosh and Paul Fildes, *Brain*, 1916: XXXIX: 478.

In a previous paper the authors have shown that after intravenous injections of salvarsan and neosalvarsan no arsenic can be found in the brain substance, due not to any lack of affinity between the brain cells and the drug, but to an obstruction to the passage of the drug from the bloodstream into the brain substance.

In the present paper the authors have undertaken experiments to throw light upon the factors involved in the penetration or lack of penetration of substance in the brain.

It was found that the stains may be divided into two groups, namely: those which stain the central nervous systems and those which do not. Methylene blue and neutral red gave the following results: meninges, unstained; cerebrospinal fluid, unstained; grey matter, stained diffusely, in granules; white matter unstained. Fluoresceine and indigo carmine stained the meninges, but not the spinal fluid or brain substance.

The blood capillaries of the brain are peculiar in that they are surrounded by an extra adventitious sheath, which it is supposed might act as a barrier to certain drugs while permitting the passage of others. An investigation of the chemico-physical properties of the various stains indicate that their solubility is of most importance. Ehrlich stated that neurotropic

substances are lipotropic, *e. g.*, that substances must be soluble in lipnoids (the cell membranes being lipnoids) before they can gain access to the cells themselves. It was found that the substances which stained the brain tissue are soluble in chloroform, while those which did not were insoluble. Salvarsan is insoluble in chloroform, thus accounting for its non-appearance in the brain. The authors have obtained some encouraging results by combining arsenic with aniline color bases, but could not elaborate the work owing to the war.

T. S. K.

The Neurological Condition Associated with Polyarthrititis and Spondylitis. Phillip W. Nathan, *Am. J. M. Sc.*, 1916: CLII: 667.

Definite symptoms referable to the nervous system are not infrequently associated with acute or chronic joint disease, but the relation between nerve and articular condition still remains obscure. The neurological phenomena consists for the most part of muscular atrophy with spasticity, vasomotor irritability, disturbed sensation and tropic skin lesions. These symptoms are associated with the arthritic involvement, but may or may not have a distribution corresponding to the joints affected. The initial symptoms may be either arthritic or neurological. In spondylitis the symptoms referable to the nervous system are similar to those in other forms of arthritis, also showing an absence of definite relationship between the intensity and even location of involvement.

The author believes that the neurological symptoms are due to nerve-root irritation and, in some cases, to compression of the cord. The cause is thought to be some morbid process affecting the spinal column.

Unfortunately, the pathological process has not been demonstrated in the human subjects, as the arthritic disease rarely is the immediate cause of death.

The author resorted to animal experimentation, producing a chronic non-suppurative poly-arthritis in animals and examining the condition in the vertebrae and spinal cord.

Of eighteen dogs, injected with hemolytic streptococci, six showed both clinical and postmortem bone and joint abnormalities in the spinal column. It was found that the vertebral changes which were induced by the inoculation are similar to those in the bones elsewhere. These changes are endosteal and subperiosteal inflammation together with a sterile intra-, peri-, and para-articular exudation. In the spine this exudate involved the epidural space and the vertebral notches. It is this exudate which causes the root or spinal irritation or compression, thus giving rise to the neurological symptoms. The chronicity of the symptoms depends probably on whether this exudate is absorbed or is followed by permanent connective tissue development.

T. S. K.

ABSTRACTS OF PEDIATRICS AND CONTAGIOUS DISEASES

Hereditary St. Vitus' Dance. Charles W. Burr, *J. Nerv. & Ment. Dis.*, 1917: XLV: 237-240.

Of hundreds of patients treated for chorea at the Orthopedic Hospital and Infirmary for nervous diseases during the past thirty years, less than one per cent give a family history of similar affection. Burr cites these data as confirmatory of the generally accepted view concerning the absence of any hereditary influence in St. Vitus' Dance.

Occasionally, however, some familial taint does exist which seems to predispose the offspring to attacks of chorea. In the family cited, seven cases distributed over three generations occurred. There was no rheumatic

history in the family nor in the affected individuals. None of the cases were severe and none showed any of the usual complications.

The conclusion seems justifiable that although ordinarily heredity plays no part, occasionally some familial neuropathy exists and manifests itself in mild cases of chorea.

J. E. McC.

Pneumococcus Pseudo-Membranes. T. Reh, *Arch. de Med. d. enf.*, 1917: XX: 131-142.

On the service of Professor D'Espine, the author has had opportunity to study eleven cases with membranes, due to pneumococcus, which clinically could not be distinguished from true diphtheria. The correct diagnosis was made only through a study of direct smears, cultures and inoculations of laboratory animals. The locations of these membranes were: Conjunctiva, one case; throat, four cases; larynx, five cases, and larynx, trachea and bronchi, one case. Most of these cases had been sent to the diphtheria pavilion with the diagnosis of diphtheria, and the clinical picture was so similar that all cases received antitoxin immediately on admission and several required intubation.

From study of his own cases and a review of the literature, Reh draws the following conclusions:

1. Pneumococcus pseudo-membranes of the conjunctivae, tonsils and larynx are possible of accurate diagnosis only by bacteriological studies.

2. The clinical picture of these affections is similar to that of diphtheria.

3. The structure and appearance of the membranes offer no basis for differentiation.

4. The treatment must be the same as for diphtheria (antitoxin administration) because the differential diagnosis cannot be made early enough.

5. The bacteriological diagnosis is important from the standpoints of prognosis and prophylaxis. The pneumococcus cases get well promptly and without complications and there is no danger of contagion.

6. For making the bacteriological diagnosis, it is necessary to find virulent pneumococci and to prove the complete absence of diphtheria bacilli.

J. E. McC.

The Cultivation of a Micrococcus from the Blood of Pre-eruptive and Eruptive Stages of Measles. Ruth Tunnickliff, *J. Am. M. Ass.*, 1917: LXVIII: 1028.

Tunnickliff in a series of blood cultures from fifty measles cases taken in the pre-eruptive stages found a very small diplococcus in forty-two cases. A similar organism was isolated from the throat of fifteen cases examined on aerobic blood plates, and it was the most frequently found of any organism in anerobic cultures from the nose and eyes. It was also isolated in pure culture from oral discharge. The organism was not found in similar blood cultures from five cases with a fading measles rash, five normal persons, two suspected measles and three scarlet fever cases. The organism grew best on semi-coagulated horse serum and whole blood ascitic dextrose agar shake cultures. It is a Gram positive organism and stains with the ordinary dyes.

C. W. W.

Acupuncture: The Best Method of Vaccination. H. W. Hill, *Am. J. Pub. Health*, 1917: VII: 301.

A number of years ago Dr. J. H. Kinyoun of Washington, D. C., suggested acupuncture as a means of vaccination to Hill. The author has used this

method extensively and found it most satisfactory. He gives the technic as follows:

The arm is washed with soap and water, then with alcohol, and finally with ether. A small drop of vaccine is deposited on the clean surface. The vaccinator's hand is closed upon the arm from behind so as to draw the skin tight in front, and the sewing-needle point, held slantingly nearly parallel with the arm, is pressed against the skin through the drop of vaccine. Then it is that one one-thousandth of an inch of the point sticks through the upper layer of the skin, carrying the vaccine with it. The needle is instantly withdrawn and another puncture exactly like the first is made close beside it, until a dozen punctures are made in the space of one-sixteenth of a square inch or less. The whole process of puncture takes perhaps fifteen seconds. At once, with a bit of sterile gauze, the surface vaccine is removed, and the sleeve drawn down. Total time from rolling up the sleeve to rolling it down, five minutes, most of which is occupied in washing the arm before making the punctures.

As a rule it is best to make three sets of punctures, one at each of the angles of an equilateral triangle having sides two inches long. Three scars are better than one and sometimes one set of punctures fails to take or even two; while out of three at least one "button" usually develops if the patient is susceptible to vaccine at all.

In those cases where the vaccination takes, the puncture spot will show nothing for four or five days, then redden, swell, and a single smooth, pearly "button" arises about the size of a large green pea. In ten days or so this will shrink and become a dark dry "button" and in about ten days more the "button" will gently separate, leaving a small, round scar. The ordinary areola develops and some tenderness of the axillary glands generally occurs.

H. O. R.

Effect of Cinematograph on the Eyes of Children. N. B. Harman,
Brit. M. J., 1917: 2929: 219

Harman's article is directly applicable to the moving-picture show so commonly attended by the children of our country. He cites several reasons why the moving-picture can be a source of injury to children's eyes. The eye has a wonderful power of adapting itself to varying conditions of illumination, but is almost incapable of itself to a single bright light in a dark space. The glare and the flicker of the picture are bad features. Another fault is the rapidity of motion. With the intent of reducing the flicker the films are moved through the machine at a rate greater than the natural rate of progress of the events depicted. The eye has habits of work, like any other organ, and resents being required to work at different rates. At these exhibitions great concentration is required. The duration of the exhibition is from one-half to three hours, during which time the eyes and mind are on a stretch. The child is not capable of this length of concentration normally. The author has examined large numbers of school-children who have been referred to the clinic because of apparent trouble with their eyes. Many of these, after failing to pass the first test, passed at a later date after the source of fatigue was removed. If these results can be produced in children with normal eyes the effect must be more serious in cases of those with defective sight. It may lead to permanent aggravation of these defects. The following suggestions are offered for the protection of the child: (1) Reasonable illumination in all parts of the hall not directly beside the screen. (2) Improvement of films so as to reduce flickering and withdrawal of films as soon as damaged. (3) Improved picture taking to bring rate of motion of object depicted more nearly to normal. (4) Increased number of intervals in show with interposition of exhibitions other than pictures. (5) Limitation of show for children to

one hour. (6) Reservation of seats for children in "optimum" portion of house. With these provisions a show once a week should do no harm to the eyes of a normal child.

H. C. K.

Osteogenesis Imperfecta. Julius H. Hess, *Arch. Int. Med.*, 1917: XIX: 163.

Osteogenesis imperfecta is a rare systemic disease of unknown etiology, characterized by imperfect development of bones. Increased absorption of deficiently formed bony trabeculae leads to deficient formation of cortex spongiosa, which results in osteoporosis. Clinically it is characterized by multiple intraperiosteal fractures, usually with little displacement of fragments and with excessive callus formation. It occurs in two clinical forms, namely, osteogenesis imperfecta congenita and osteogenesis imperfecta tarda.

Heredity seems to have some etiological bearing. Harmen has followed the disease through three generations in which it affected nine of ten children and a child of one of these. Zurhelle reports a case in a child in whose mother he found a deformity of the leg and in whom the radiograph showed healed fractures and osteoporosis. Calcium deficiency has been said, without much evidence, to be a cause. Prematurity and syphilis are also suspected. Both parents were syphilitic in Vrolik's case and the mother in Henckel's, but in neither case did the child show any sign of congenital lues.

The following deviations from the normal are noted in cases of this disease: (1) Absence of successive thickening of the corticalis toward the middle of the diaphysis. (2) Bone formation from the periosteum remains in the primitive stage of fibrous bone. (3) Reticular structure shows wide meshes, the Haversian canals being replaced by large marrow spaces. (4) The osteoporosis in all probability is secondary to excessive formation of the medullary spaces, which again is due to deficient development of the bony substance and to increased absorption.

Multiple fractures occur on very slight provocation. Fractures are mostly complete with preserved periosteum. This is important for differential diagnosis. In recent fractures the fragments are connected by fibrous tissue, in older ones by spongiosa. The callus is excessive in size but is porous. The children are usually mentally underdeveloped and are small and under weight for their age. The skin is soft and delicate. Segawa has noted profuse head-sweating. The size of the head is excessive and the hair is luxuriant. The abdomen is protuberant. The extremities are shortened, curved, angulated and show the callus of fractures. The feet and hands are small and delicate. There is little pain with the fractures and crepitus is often absent. Healing is more rapid than in normal bone, but marked deformity usually results. While the fractures heal rapidly, osteotomies for correction of deformities heal very slowly.

In the differential diagnosis the X-ray is of great value. Cretinism is characterized by delayed development of bony nuclei in the epiphyses and delayed union between epiphysis and diaphysis. In Mongolism the bones are well developed for the age. In rickets partial or complete fractures may occur, but they are not intraperiosteal and there is little tendency to callus formation. Scurvy has some very definite clinical signs and a very definite X-ray finding. Bone tuberculosis is a destructive local process with no tendency to bone stimulation. Fractures are comparatively rare in infantile syphilis and beside the disease offers a definite picture with the radiograph.

The majority of the cases of this malady are still-born or die a short time after birth or within the first three years of life. These children are very susceptible to secondary infections and usually die of some inter-current disease. Some cases occurring later in childhood undergo spontaneous cure, the fractures becoming fewer and fewer.

Calcium salas, phosphorus and codliver oil have been recommended in the treatment. Little result has been attained from the use of ductless glands or their preparations. Proper food, fresh air and perhaps phosphorus are the best aids to treatment.

H. C. K.

ABSTRACTS OF GYNECOLOGY AND OBSTETRICS

The Obstetrical Significance of Blood-Sugar, With Special Reference to the Placental Interchange. William H. Morriss, *Johns Hopkins Hosp. Bull.*, 1917: XXVIII: 140.

This is one of a series of studies upon placental interchange now in progress at Yale. Maternal bloods were tested for sugar by the method of Lewis and Benedict, both before, during, and after labor. This method haemolizes the blood, so sugar of both plasma and cells is measured.

Bohr taught that there is hyperglycaemia in pregnancy because glycogen furnishes the energy for embryonic development. These tests disprove this theory, for the normal blood-sugar is about 0.09%, and that in these pregnant women ranged about the same: 0.116% to 0.098%. However, alimentary glycosuria is more readily produced in pregnancy. 100 grams of glucose will not affect a normal woman, but it will produce glycosuria in about one-third of the pregnant women. This fact is not, however, due to a pregnancy hyperglycaemia, but apparently to a greater permeability of the kidney to glucose in pregnancy. Glucose never appears in the urine of the non-pregnant until the blood-sugar is above 0.17%. In pregnancy, however, the sugar may appear when the blood-sugar is only 0.095%.

In spite of lactation, blood-sugar is not increased in the puerperium, for any lactose that gets into the blood acts as a foreign substance, and is at once passed out at the kidney.

There is a hyperglycaemia (0.132%) just at the moment of birth, due to excessive muscular activity, anesthetics, excitement, and the like. There is none in the first stage of labor. In eclampsia, there may be a rise of the blood-sugar at the time of a convulsion, but the blood-sugar is much higher in nephritic toxæmia than in true eclampsia.

The mean value of 24 foetal bloods at the moment of delivery was 0.115%. This was 0.125% after operative delivery. The figures run a little lower than the maternal blood, partly because the maternal blood was drawn from peripheral vessels.

Conclusions: (1) Blood-sugar in pregnancy is normally 0.09% to 0.11%. (2) The blood-sugar increases in the second stage of labor. (3) This rise is caused by muscular activity, and especially by anaesthetics. (4) The foetal blood-sugar at the moment of birth is slightly lower than the maternal. (5) We are justified in believing in a placental interchange of sugar by transfusion. (6) There is a high blood-sugar after an operation. (7) In pre-eclamptic conditions, the blood-sugar is normal. It rises during convulsions, but not so high as in nephritic toxæmia.

J. T. S., Jr.

Diagnosis and Management of Pregnancy in the Presence of Acute Abdominal Conditions. Joseph B. DeLee, *Surg. Gynec. Obst.*, 1916: XXIII: 660.

The diagnosis of pregnancy in the presence of acute abdominal conditions does not differ from the regular diagnosis of pregnancy.

Several acute abdominal conditions must be differentiated from pregnancy itself, most prominently, ectopic gestation and appendicitis; ovarian

cyst with twisted pedicle and angular pregnancy; polyhydramnion and acute ascites; rupture of uterus and stomach or gall bladder; vomiting of pregnancy and that due to some other condition.

Appendicitis Versus Ectopic Gestation

- | | |
|---|--|
| 1. No signs or symptoms of pregnancy. | 1. Present. |
| 2. Pain, nausea and vomiting, fever. | 2. Pain worse, vomiting less, fever absent or less. |
| 3. Tenderness and rigidity high up. | 3. Tenderness and rigidity much less and low down. |
| 4. Leucocytosis usual, and increases from hour to hour. Normal haemoglobin. | 4. Leucocytosis equivocal. The blood count shows increase of the polymorphonuclears and mononuclears, the basophiles with the signs of secondary anaemia. Low haemoglobin. |
| 5. Patient flushed and excited. At very beginning there may have been a little dizziness. | 5. Pale and faint or apathetic. |
| 6. Uterus and adnexa normal. | 6. The characteristic findings. |
| 7. Feel a tumor high-up in pelvis. | 7. Tumor low in pelvis. |
| 8. No uterine symptoms. | 8. Menstruation atypical and discharge of decidua. |
| 9. Abderhalden test usually negative. | 9. Abderhalden test positive. |

The author believes in immediate operation for ruptured ectopic, the patient being judged fit to withstand the operation. If shock is severe, operation should be deferred until partially recovered from. If infected, drain from below.

Appendicitis complicating pregnancy is not uncommon and is unusually dangerous. If there is only a history of chronic trouble operation is postponed. With acute appendicitis immediate operation is advised. The incision must be made higher and further in the flank the more advanced the pregnancy. Avoid manipulation of the uterus as far as possible, drain only when absolutely necessary and then away from the uterus. Large doses of morphine after operation will decrease incidence of abortion.

Acute salpingitis as can be imagined is rare during pregnancy. However, if the tubes are very large it is recommended they be removed to prevent rupture at time of labor.

Cholecystitis and gall stones should be operated during pregnancy only when imperative. The pregnancy demands no special consideration at operation. If labor comes on during an attack, reduce expulsive efforts by forceps delivery to prevent possible rupture of gall bladder.

Posture in bed, knee chest position and proper medication will usually control a pyelitis. If abscess forms renal drainage is indicated; the ureteral catheter has a useful field and if delivery is imperative great aseptic care must be used.

Uterine rupture or perforation during criminal abortion demand immediate laparotomy with closure of wound or hysterectomy depending on circumstances. A perforation with clean technique demands no treatment but packing.

Strangulated hernia, injury to the various abdominal organs, especially the uterus, demand immediate laparotomy.

The Results of a Routine Study of the Placenta. J. M. Slemons, *Am. J. Obst.*, 1916: LXXIV: 204.

The author has carefully studied 600 placentae with the following results:

Gross anomalies	41 cases
Premature infants	17 cases
Maternal complications	10 cases
Question of syphilis	18 cases
Death of infant	33 cases
Placental bacteremia	4 cases

It was found that one out of every six specimens showed some abnormality or threw some light on the clinical manifestations of the mother or child. Knowledge of a normal placenta was of value to the pediatrician.

In well run clinics the placenta should be carefully examined, not only at the bedside, but in the laboratory as well. It should be weighed and measured, gross abnormalities noted and fresh tissue tested and the chorionic villi studied microscopically. Careful records should be kept of each examination not only for clinical purposes, but also for investigative study.

Whenever the villi are suggestive of syphilis special staining methods should be employed. In the case of still-born and macerated children or those that die within the first few days of life, such investigation should always be made and the reward will be the discovery of many cases of unsuspected syphilis. As can be done by such an examination, the establishment of the absence of lues is most desirable.

All operations should be avoided that can possibly be postponed. When necessary, it may be advisable to empty the uterus first. The operating is more difficult, respirations impeded, vascularity increased, kidneys less able to withstand the anaesthetic, and the result always more in doubt.

W. D. F.

ABSTRACTS OF DERMATOLOGY

Phenol. Douglas W. Montgomery, *J. Cutan. Dis. inc. Syph.*, 1917: XXXV: 157.

Phenol has been used as a caustic in some skin diseases from time immemorial. One must always be on guard to prevent gangrene in using phenol and Schussler and Stone have reported a case of gangrene of the finger following the use of a five per cent carbolic acid ointment under a closed dressing. One should always use care with unguentum phenoles. Phenol is an excellent antipruritic in a strength of one-half to 2 per cent, but one should not employ it in an occlusive dressing. Sutton advises the use of 1 per cent phenol in an ammoniated mercury ointment for impetigo.

H. N. C.

A Study of the Nitrogen Metabolism of Two Cases of Eczema. J. F. Schamberg and C. W. Kaiziss, *J. Cutan. inc. Syph.*, 1917: XXXV: 135.

(1) Two cases of generalized inflammatory dermatoses ordinarily designated by the dermatologists as eczema were studied. The one case was probably a chronic exzematoid dermatitis of external origin; differing in its history, etiology, symptomatology, metabolic picture and response to treatment from the case of eczema of internal origin.

(2) The patient suffering from chronic dermatitis failed to maintain a nitrogen equilibrium on a low nitrogen diet, and did not exhibit a true nitro-

gen retention at higher levels. He likewise failed to show any improvement on a low protein diet.

(3) The patient with eczema of systemic origin exhibited a true nitrogen retention and exhibited marked improvement on a low protein diet.

(4) The case of chronic dermatitis eliminated "rest nitrogen" in excess of the normal for a long time while, in the case of eczema this did not occur.

(5) The elimination of creatinine was normal in both cases.

(6) Both cases had an increased output of endogenous uric acid—perhaps bearing some relation to the leucocytic deposits in the skin and to the absorption of some of their products.

H. N. C.

A Study of the Involvement of the Bones and Joints in Early Syphilis.

Udo J. Wile and F. C. Senear, *Am. J. M. Sc.*, 1916: CLII: 689.

Careful and thorough examinations reveal that there is a frequent involvement of the bones and joints in early syphilis. The sharp pain elicited in pressure is probably periosteal in character and can be checked up by X-ray examination. The authors thought that cases complaining of deep, dull pain were probably medullary in character. The periosteal cases seemed to react to treatment better than those with deep involvement. In this day, when many writers are inclined to think of different strains of spirochetæ, they could find no reason for considering an osteotropic variety.

H. N. C.

ABSTRACTS OF OPHTHALMOLOGY

Ipecacuanha Conjunctivitis in Soldiers. Conjunctivitis Produced by the Installation of Ipecacuanha. Bailliant, *Ann. d'Ocul.*, 1914: CLII: 438.

The author saw many cases of this form of conjunctivitis in soldiers, and found it usually unilateral. It remained unilateral however long its duration, because an attack in one eye was sufficient to get the soldier invalided. There was no increase of conjunctival secretion, and consequently no agglutination of the eyelids, or formation of crusts on the roots of the eyelashes. The lid margins were frequently slightly hyperæmic, and occasionally there occurred an eczematous condition of the skin of the eyelids. The bulbar conjunctiva was of a pale, dull-red color, this being most marked in the lower cul-de-sac. The upper palpebral conjunctiva did not undergo any change and no complications were observed.

R. B. M.

Examination for Ipecacuanha Powder Introduced into the Eye. Kalt, *Ann. d'Ocul.*, 1916: CLII: 23.

The following method was devised for detecting the presence of ipecacuanha powder used to produce conjunctivitis: A piece of gun cotton the size of a pin-head, held in a pair of forceps, is rubbed over the lid margin, the caruncle and the inferior cul-de-sac. The gun cotton is dried in an incubator at 50° C., and then dissolved in a watch-glass by use of a mixture of one part of alcohol and two parts of ether. A thin film of collodion is obtained by allowing evaporation to occur, and this is covered with water and left exposed to the air for fifteen minutes. A microscopic examination of the film is made by placing a piece of it on a slide and examining it under water. Another method is that of pouring the collodion onto a slide, allowing the alcohol and ether to evaporate, and then examining it under water. Microscopically, remains of cotton fibers will be seen, and if ipe-

cacuanha powder is present, it will appear in the form of dark masses. To differentiate the starch which forms the greater part of the powdered ipecacuanha, Lugol's solution of iodine should be employed. The starch granules will be colored blue.

R. B. M.

Conjunctivitis and Pseudo-Trachoma Set Up by Emetine. Fromaget and Harriet, *Ann. d'Ocul.*, 1916: CLIII: 388.

These observers saw cases where, for the purpose of escaping from military duty, soldiers induced conjunctivitis by the use of powdered ipecacuanha in the eyes. The condition is not well known among medical men nor among ophthalmic surgeons. It presents typical clinical characteristics which make it readily recognizable once a case has been observed. The conjunctivitis is almost invariably unilateral, affecting most commonly the right eye. There is often an eczematous dermatitis of the cutaneous surface of the eyelids. In most cases there is no increase of conjunctival secretion, despite the severity of the conjunctivitis. Upon everting the lower eyelid, the palpebral conjunctiva and that of the cul-de-sac are seen to be inflamed and oedematous, and the salmon-blue recalls the color of lean ham. When the powder has been employed in small quantities, or recently, the redness and oedema are localized to the lower portion of the palpebral conjunctiva, but when long applied, the changes involve the whole of the conjunctiva. In some of these cases the appearance resembles that of trachoma, and such cases have been operated upon even by experienced men. These pseudo-trachoma granulations undergo spontaneous cure in a few weeks, provided the eyes are protected from farther irritation by the application of a collodion dressing. Corneal complications are not observed. From experiments upon human eyes, the authors conclude that a chemical irritant is the cause of the conjunctivitis, and this they identify as emetine. They observed that when a 2 per cent solution of emetine hydrochloride is instilled into the eye, several hours elapse before the inflammatory symptoms are apparent. A similar latent period occurs when powdered ipecacuanha is employed.

R. B. M.

ABSTRACTS OF LARYNGOLOGY, RHINOLOGY AND OTOTOLOGY

Skin Grafting in Mastoid Operations. H. J. Marriage, F. R. C. S., *J. Laryngol.*, Lond., 1916: XXXI: 73.

Under the above title Marriage discusses the methods of primary and secondary skin grafting. Secondary grafting was first recommended by Siebenmann in 1893, and later by Denker in 1897. Jansen in 1893 applied small grafts at the time of the original operation. Marriage thinks the chief credit belongs, however, to Ballance, who published his very instructive paper in 1900. In this he described the use of large Thiersch grafts applied to the cavity a week or ten days after the original operation.

The advantages of the operation he enumerates as follows: (1) the cavity heals more quickly; (2) contraction and stenosis are prevented; (3) the patient is spared a large amount of pain; (4) both patient and surgeon are saved much time and trouble; (5) complicated meatal flaps are avoided; (6) the Eustachian tube is closed in a large per cent of cases.

Marriage thinks that primary grafts are applicable to chronic cases of mastoid disease, but not to "cases of acute mastoid disease when it is necessary to perform a radical mastoid operation." The advantages of the primary method are: (1) saving of time in convalescence, and (2) doing away with the necessity of a second anesthetic.

The Ballance method, used by Marriage, is to cut a large Thiersch graft 2x3 inches from the upper part of the thigh and to apply this to the

cavity by exhausting the air from beneath it by means of a pipette and suction. A second smaller graft is applied to the soft parts behind the ear, its end being allowed to protrude through the auditory meatus. The grafts are held in position by means of $\frac{1}{2}$ -inch gauze packing, which is removed on the fourth day.

Among objections, Marriage admits that, theoretically at least, "it is impossible to get the cavity aseptic, but in practice it has been found that this makes no difference." He insists, however, that "it is essential thoroughly to open up all depressions in the bone, so as to make sure that septic cavities are not behind the graft." He does not hesitate to use grafts where there is a fistula in the bony semicircular canal, provided the membranous canal is not involved. Grafting is, of course, contraindicated "in suppuration of the internal ear where the object of the operation is to secure free drainage."

W. B. C.

Mechanical Problems of Bronchoscopic and Esophagosopic Foreign Body Extraction. Chevalier Jackson, M. D., *Am. M. Ass.*, 1917: LXVII: 245.

The author urges the necessity of a careful working out of the mechanical problem, both by roentgenographic and endoscopic study, before an attempt at removal of foreign bodies in the oesophagus, larynx, trachea or bronchi.

His reasons are: Attempted endoscopic removal of a foreign body by seizure and traction, without proper study of the mechanical problem, ends in a high percentage of mortality.

Such attempts frequently fail to remove the foreign body and render its subsequent removal either difficult or impossible. In a series of 550 cases of foreign body in the oesophagus, larynx, trachea or bronchi, successful removal was accomplished in 543. Seven of the 550 patients died within a week, making a mortality of 1.3 per cent. In a large proportion of the successful cases previous unsuccessful attempts at removal had been made by others.

The author classifies foreign bodies in regard to the special mechanical problems involved in their removal.

C. E. P.

ABSTRACTS OF PATHOLOGY

Adenoma Formation in the Stomach of Rabbits by Feeding with Lanolin. Yutaka Kon, *J. Med. Research*, 1917: XXXV: 337.

In rabbits fed daily with lanolin which contains a large amount of cholesterolin, there is not only a general accumulation of cholesterolin-ester in the intima of the aorta, spleen, liver, kidneys and adrenals, such as follows continued feeding of egg yolk, but there is, in addition, such marked deposition of lipid substances in the mucosa of the pylorus of the stomach as to form distinct adenomatous growths. The latter are due to the accumulation of cholesterolinester in the stroma cells of the tunica propria and infiltration of the cells of the mucosa with this anisotropic lipid substance followed by focal epithelial and glandular hyperplasia and hypertrophy, but with no malignant tendencies. The cholesterolin-ester could not have been absorbed directly by the gastric mucosa, but was probably taken up from the intestinal mucosa and transported to the stomach wall by means of the blood and lymph vessels. This experimental adenomatous growth is somewhat comparable to the xanthoma in man.

H. R. W.

The Pathologic Effects of Streptococci from Cases of Poliomyelitis and Other Sources. Carrol G. Bull, *J. Exper. M.*, 1917: XXV: 557.

Cultures from the tonsils of thirty-two cases of poliomyelitis were almost invariably streptococci, which were inoculated into rabbits and other lab-

oratory animals. Of 78 inoculated animals, 43 died, 4 with flaccid paralysis of limbs. Eighteen animals showed impairment of motion due, however, to arthritis, tenosynovitis or general weakness. Fourteen rabbits developed meningitis. Those animals that died with flaccid paralysis showed no lesions of the spinal cord comparable to the pathognomonic lesions of poliomyelitis in man. The lesions in man and monkeys consist of, first, meningeal infiltration, confined mainly to the large blood vessels of the medulla and spinal cord; second, marked intramedullary perivascular infiltration affecting chiefly the medulla, spinal cord and intervertebral ganglia; and, third, degeneration, neurosis and subsequent phagocytic destruction of the nerve cells, especially the motor cells of the spinal cord. The cellular invasion of the meninges is chiefly lymphocytic, not polymorphonuclear. In the rabbit the lesions consist of a more or less purulent meningitis; focal abscesses and a focal meningo-encephalitis, very unlike any lesion that is observed in poliomyelitis. Moreover, bacteria are frequently detected in the sections of lesions in the rabbits, but never in those in man or monkey. Streptococci derived from conditions other than poliomyelitis may produce lesions and symptoms in rabbits indistinguishable from those produced by streptococci of poliomyelitic origin. Cultures of streptococci from cases of poliomyelitis failed to produce, in monkeys, any condition resembling poliomyelitis. In a few cases in which a streptococcus was isolated from a case of poliomyelitis, in either man or monkey, the inoculation of the organism resulted in no definite infection except a purulent ophthalmitis. These streptococci are only secondary bacterial invaders of the nervous organs. Repeated injections of streptococci in monkeys failed to protect them against subsequent inoculation with poliomyelitic virus, thus disposing of any immunological relationship between streptococci and the filterable virus of poliomyelitis. In conclusion, the author states that "we have failed to detect any etiologic or pathologic relationship between streptococci and epidemic poliomyelitis in man or true experimental poliomyelitis in the monkey."

H. R. W.

The Neutralization of the Virus of Poliomyelitis by Nasal Washings.

Harold L. Amoss and Edward Taylor, *J. Exper. M.*, 1917: XXV: 507.

The washings of the nasal and pharyngeal mucosa are capable of neutralizing the active virus of poliomyelitis. This power varies in different individuals and even in the same individual, inflammatory conditions in the upper air passages being one factor that tends to decrease the inactivating effect. The neutralizing substance is organic in nature, soluble in water and more or less thermolabile. The production of healthy carriers of the poliomyelitis virus may depend upon the ability of the nasal secretions to inactivate the virus. This neutralizing property of the secretions may operate to prevent actual invasion of the virus with production of infection, but it is probably not the essential element on which the defense against the infection rests.

H. R. W.

The Classification of Streptococci. Francis G. Blake, *J. Med. Research*, 1917: XXXVI: 99.

A critical review of the confusing status of the classification of streptococci is given. A simple classification for clinical purposes is recommended by the use of the blood-agar plate method followed by lactose and mannite fermentation. The blood-agar plate method separates the streptococci into two main classes: Streptococcus hemolyans, characterized by a wide zone of hemolysis surrounding the colonies; and Streptococcus viridans, characterized by methemoglobin formation with no alteration of the blood. The latter is subdivided into three subgroups by its fermentation

reactions in lactose and mannite, viz: *Streptococcus buccalis*—commonly found in the mouth—fermenting lactose but not mannite; *Streptococcus fecalis*, occurring in the intestinal tract, characterized by fermenting both the lactose and mannite; and *Streptococcus equinus*, found in horse faeces and street dust, fermenting neither lactose nor mannite. Such a classification is not ideal, but in the absence of one with an immunological basis it is more practical and less confusing than the more complicated fermentation methods of classification.

H. R. W.

Bile Salts and Typhoid Septicemia. LeFevre de Arric, *Compt. rend. Soc. de biol.*, 1917: LXXX: No. 3.

The author has arrived at the conclusion that the bile salts, just as the bile itself, favor the development of typhoid septicemia in guinea pigs; the taurocholate of sodium seems to be more favorable than the glycocholate.

A. A. E.

A New Culture Medium. A. Berthelot, *Compt. rend. Soc. de biol.*, 1917: LXXX: No. 3.

The author recommends the following medium for general work:

Water	4 litres
Potatoes	300 grammes
Carrots	150 grammes
Turnips	150 grammes

This must be rendered faintly alkaline. Special points in the technique are thoroughly gone into. For special work, 2-5% of maltopeptone may be added.

A. A. E.

DEPARTMENT OF THERAPEUTICS

Conducted by J. B. McGEE, M.D., Cleveland

Disease of the Gall-bladder: David Riesman, in the *American Journal of the Medical Sciences* for April, writes upon the medical aspects and diagnosis of disease of the gall-bladder. As an independent affection, inflammation of the gall-bladder is not common, and in the majority of cases the gall-bladder is the seat of stones. Nevertheless, we must take cognizance of non-calculous inflammation. It is met with in typhoid fever, pneumonia, food-poisoning, etc., and manifests itself by tenderness in the gall-bladder area, by leucocytosis and usually by jaundice. He states that in gall-stone colic the pain is much more often in the epigastrium than the text-books state. It may travel to the back, to the right side or left, to either or neither shoulder. Nausea and vomiting while common are not rarely absent. A chill is of significance. Jaundice is not common; its presence is of great diagnostic value, its absence without significance. If every patient's urine is examined within forty-eight or seventy-two hours after an attack, traces of bile will not rarely be found. There is often great difficulty in deciding whether a patient has gall-stone disease or gastric or duodenal ulcer. One point of importance that has impressed him as of possible value in these cases is the persistence of the pains. Attacks of pain of gall-bladder origin only, rarely last longer than a few hours or a day or two, while those of ulcer frequently last much longer. Gall-bladder attacks are more often nocturnal than those due to gastric ulcer and are less related to the food intake. Gall-stone

colic may be closely simulated by the crises of locomotor ataxia, the pains of which are often so severe as to require morphin injections. Sometimes a sharp pain in the back or in the right chest posteriorly is a manifestation of gall-stone disease. He has seen several such instances. Cases are common in which the symptoms are those of nervous dyspepsia. The patients never have severe pain, but suffer for years from "gas," belching, bloating, indigestion, and various neurasthenic manifestations. The fact that neither diet nor the rest cure to which many are subjected is of any permanent value should arouse the suspicion of organic disease, which might be ulcer, appendicitis or gall-stones. That there should be at times difficulty in distinguishing between gall-stone disease and angina pectoris might seem incredible, yet it is true. Lately attention has been called to a possible relation between infections of the gall-bladder and disease of the joints. In gall-bladder disease Russel S. Fowler, in the same number of the journal, believes it is logical to assume that cholecystectomy is indicated in all diseases of the gall-bladder, whether causing mild or severe symptoms. The operation is not done for the purpose of removing stones, for these may or may not be present, but for the purpose of removing tissue diseased as a result of a progressive inflammation.

Gastric Ulcer: Louis Fischbein, in the *Boston Medical and Surgical Journal* for March 29th, emphasizes a few points in the diagnosis and treatment of gastric ulcer. He presents the results in 26 cases, 18 men and 8 women, whose ages were from 20 to 62 years. Pain two to four hours after eating was a very constant feature, and present in all the cases, but varied greatly in intensity, character and location in different patients. The pain was temporarily relieved in some cases by the taking of food or bicarbonate, in some by lying down or changing the position from left to right side or *vice versa*. Vomiting of blood did not occur in any of these cases; vomiting of food occurred occasionally in three patients. Pyrosis was present at all times in all of the cases, and in some it preceded the pain by years. Hyperacidity was found in most of the cases, the total acidity ranging from 60 to 130. Loss of weight, in spite of good appetite, was present in all cases. Occult blood in the stools, as demonstrated by the guaiac test, was present in all cases, and to his mind is the most reliable and most characteristic symptom of gastric ulcer. Naturally, blood in the stools may also mean gastric cancer, but there are usually other signs and symptoms to differentiate between these two affections. Occult bleeding is apparently not present in gall-stones, as in eight cases the guaiac test was found negative. *Occult blood in the stools in conjunction with chronic indigestion signifies ulcer either of the stomach or duodenum.* The treatment of these cases and of a few others not here included is a modification of the original von Leube-Zimssen method, and its cardinal principles are: (1) Rest in bed; (2) a bland, easily-digested diet; (3) hot applications to the abdomen, and (4) alkalies to neutralize or reduce the gastric acidity. If circumstances permit or if blood is found in the stools after ten days, rest in bed for three to four weeks is insisted on. Feeding per rectum is illusory in the light of the newer physiology, which teaches that the stomach is practically never at rest. As to hot applications to the abdomen, it is difficult to state how much they accomplish. They certainly exert a beneficial influence on the subjective symptoms, and by keeping the patient on his back perhaps indirectly assist in the healing of the ulcer. In many cases of purely functional disorders of the stomach with normal acidity the symptoms are often relieved or improved by the administration of alkalies. There is apparently in these cases a hyperesthesia of the gastric mucous membrane which reacts abnormally to even normal stimuli; hence the beneficial effect of the alkalies. The same must be true in gastric ulcer, where there is undoubtedly a pronounced hyperesthesia of the gastric membrane, and the employment of alkalies in this

disease rests, therefore, on a fairly scientific basis. One-half teaspoonful of sodium citrate and magnesii ustae is given one-half to one hour after each feeding and when constipation is present a little pulv. rad. rhei is added. Bismuth subcarbonate, one heaping teaspoonful in a glassful of water, is given morning and evening on an empty stomach, in the traditional belief that it forms a protective covering over the ulcer, no evidence having been adduced to prove the fallacy of this belief. The treatment here outlined was uniformly successful, all of the patients having gotten rid of their symptoms and of the occult blood in their stools.

Influenza: In the *Medical Record* for April 9th, Samuel A. Brown considers the therapy of influenza, stating that it should be kept constantly in mind that there is present a mixed infection and that the grippe bacillus might play a minor part in many of these cases. Nevertheless it is a specific disease, directly traceable, and excited by one or more organisms. The problem of therapy may be divided into: (1) The destruction of the organism; (2) the prevention and relief of the toxic symptoms associated with the infection; (3) the generation of an antibody; (4) the prophylaxis and protection of the exposed individuals. He classifies the various types as the catarrhal, intestinal, rheumatoid and the nervous. In the treatment of all types we are largely dependent on the results of clinical experience and observation. In the catarrhal type the most useful drugs have been found to be quinine and the salicylates (phenol, salol, salophen and salicylic acid). Others used for the control of symptoms are phenacetin or some other coal-tar preparation, as an analgesic. If the catarrhal symptoms are excessive, camphor is often added. In other words, starting with quinine or the salicylates as the primary factor, other agents are introduced to meet individual symptoms. In the enteric form, while still using the quinine and salicylates, it is usually necessary to emphasize the opiates in some form to control peristalsis. In the rheumatic type the coal-tar derivatives with caffeine are emphasized to relieve the pain. In the nervous or cerebral type it is often necessary to prescribe the cerebral sedatives, as the bromides, chloral, etc., and in severe cases, spinal tapping. As to the presence of the toxin, he believes high colon irrigations, drinking large quantities of water, and the using of large quantities of sodium bicarbonate. Under the head of generation of an antibody he calls attention to forced feeding and the use of arsenic, strychnine or nux vomica and possibly the use of the vaccine. If vaccine be used, it must necessarily be a mixed vaccine. He advocates prophylaxis, isolation of patient and burning of nasal and respiratory excretions.

Hypnotics: Louis T. de M. Sajous, in the *N. Y. Medical Journal* for March 31st, writes as to the use of inexpensive drugs in practice concerning the hypnotics. Expense reduction is best accomplished by an almost exclusive use of certain well tried official drugs, in particular chloral hydrat and the bromides. The former, while still selling at a price approximately twice that prevailing before the war, remains by far the least expensive pure hypnotic drug from the double standard of cost and efficiency. In the great majority of cases, he believes it should be given preference over all others. While some caution is perhaps wise in the presence of cardiac weakness or depression of the respiratory and especially vasomotor centers, the formerly much emphasized apprehension of harm from it in cardiac cases transcribed from one text-book to another, has been shown erroneous by Cushny and many others, and need no longer deter the practitioner from availing himself of this drug when indicated. To diminish its burning taste, and possible irritation of the stomach, it may be given in a dilute mucilage or syrup of acaea, or syrup of orange,

or an alcoholic vehicle. Paraldehyde is at present about five times as expensive, dose for dose, as chloral hydrat. Sulphonmethane (sulphonal) and sulphonethylinethane (trional), though fairly strong hypnotics, present the disadvantages of acting slowly, of causing more or less persistent depression after awakening, also of occasionally irritating the kidneys, and of sometimes giving rise upon repeated use to a dangerous form of cumulative poisoning. The cost of sulphonal and trional is about twenty times, dose for dose, that of chloral hydrat. Probably the chief rival of chloral from the standpoint of efficiency and general availability in respects other than cost is veronal. This unofficial agent, now considered by many the equal of chloral hydrat in hypnotic power, is advantageous in being un-irritating and almost tasteless, and in possessing an additional analgesic power. It acts more rapidly than sulphonal, though less rapidly as a rule than chloral hydrat, and the patient is usually free of after depression. That veronal is by no means free of possible toxic action, however, is suggested by the rather numerous reports of acute poisoning since its introduction. Many were probably due to excessive doses, but several cases of fatal collapse have resulted from the use of only ten or fifteen grains. Veronal has been held to possess, because of slow excretion, a cumulative tendency similar to sulphonal, though less marked. Its cost is at present very high.

Hypertension: In the March number of the *Medical World* F. Aeberli states that moderation is the keynote both as regards prevention as well as treatment of hypertension. Frequent periods of rest are always beneficial. Meat should be limited or even eliminated. A cereal and milk diet is best suited to serious cases. Tea and coffee being vasomotor stimulants, need regulating; excessive amounts of fluids are counter-indicated, as they may increase the intravascular tension and throw too great a burden upon the kidneys. Nicotine in even moderate amounts raises the pressure promptly. The immediate effect of alcohol is vasodilation, but the toxins resulting from impaired metabolism cause hypertension. Warm baths and saline elimination are decided aids in combating this trouble. As long as a good pulse pressure is maintained this may be taken as an index of an efficient circulation. If, however, the pressure is excessive, and especially if accompanied by headaches, dizziness, precordial pain, palpation, etc., medication may have to be resorted to, as cerebral hemorrhage is a constant menace. Nitrites stand at the head of the list of drugs generally employed because of their vasodilating effect. According to Sollman, they act directly on the nerve endings in the arterial walls, depressing their activity. Their action is short-lived, not lasting much over one-half hour. Nitroglycerin 1/500 to 1/100 grain, dissolved on the tongue, 4 or 5 times a day, will often through these short periods of relief from a distressing tension, make life bearable. Sodium nitrite is credited with a slightly longer action, but this slight advantage is outbalanced by its irritant action on the stomach. For prompt effect, as in angina pectoris, the nitrite of amyl is of great aid. The iodides, bromides, chloral and veratrum are frequently of aid.

Diet in Old Age: J. L. Nascher, in the April number of the *Medical Review of Reviews*, states that the conservation of the aged has been almost entirely neglected by the profession, and no factor in their welfare has received less attention than that of diet. Text-books on nutrition and diet slur over the diet for the aged in a few lines or ignore it altogether. Owing to the diversity in extent and character of the senile changes in advanced life in different individuals and the great differences in activity and habits of aged persons, it is not possible to arrange a

general dietary based upon calories and nitrogen equilibrium. Experimental dietetics conducted under laboratory conditions cannot be made applicable to ordinary living except by profound modification of the mode of living. The only theoretically perfect diet is mothers' milk for infants, and it is not possible to devise any other dietary which contains no objectionable features or is suitable for all alike. Potash salts have a deleterious effect in old age. Potato contains about 40 per cent of potash in its ash. Beans and peas are also comparatively rich in potash, while rice contains only 1 per cent in its ash. The total amount of food must be diminished. We have heard much about the advantages of a low protein diet in old age. A diet containing 50 grams protein daily is a low protein diet when compared with the 100 or 120 grams required in active earlier life, but it is high in proportion to the other foodstuffs ordinarily taken by healthy aged persons. It is impossible to devise positive rules applicable to all, or to arrange a fixed dietary. Foods should be given in a liquid, semi-liquid or mush form and dry foods, especially smoked foods and nuts, avoided. Food should not be given at shorter intervals than four or five hours. Mild alcoholics with meals and at bedtime are not objectionable.

Hexamethylenamin: In the *Journal A. M. A.* for April 14th, attention is called to the use of hexamethylenamine in the pyelitis of infants. Properly administered in infections of the urinary tract, this drug undoubtedly yields satisfactory results. There is danger, however, that it may be used without complete regard for its indications and contraindications. There is something contradictory in the recommendation of this drug to prevent nephritis, and the statement that it has produced albuminuria and hematuria in some cases. Dr. I. A. Abt gives a word of caution as to its use in pyelitis in infancy. It should be under continuous observation, and it should not be continued for an extended period. He has more than once seen severe and fatal nephritis which, in his opinion, was due to the overuse of urotropin. If urotropin is given to infants under one year of age, it should be given in one grain doses, followed by water. This may be repeated four or five times a day.

NEW AND NONOFFICIAL REMEDIES

Ferric Cacodylate; Iron Cacodylate.—A ferric salt of cacodylic acid containing from 39.7 to 44.9 per cent arsenic (As). A grayish-brown powder, soluble in water. The use of ferric cacodylate has been proposed in cases where the effects of iron salts and the mild arsenic effect of cacodylates is desired. Dosage: From 0.015 to 0.1 Gm.

Ampules Iron Cacodylate—Mulford, 0.03 Gm.—Each ampule contains ferric cacodylate 0.03 Gm. in 1 Cc. solution. The H. K. Mulford Co., Philadelphia.

Ampules Iron Cacodylate—Squibb, 0.03 Gm.—Each ampule contains ferric cacodylate 0.03 Gm. in 1 Cc. solution. E. R. Squibb & Sons, New York City (*Jour. A. M. A.*, April 7, 1917, p. 1043).

Acetylsalicylic Acid—Squibb.—A non-proprietary brand of acetylsalicylic acid complying with the standards of New and Nonofficial Remedies. E. R. Squibb & Sons, New York City.

Aspirin, L. & F.—A non-proprietary brand of acetylsalicylic acid complying with the standards of New and Nonofficial Remedies. Lehn & Fink, New York City (*Jour. A. M. A.*, April 28, 1917, p. 1261).

The Academy of Medicine of Cleveland

ACADEMY MEETING

The one hundred and thirty-eighth regular meeting of the Academy of Medicine was held Friday, April 20, 1917, at the Cleveland Medical Library.

The minutes of the last meeting were read and approved. The minutes of the Council meeting of April 10th were read and approved.

Dr. Updegraff read a notice of a meeting of the Cleveland Unit of the Preparedness League of American Dentists, to be addressed by Major H. L. Gilchrist on April 23rd at the Cleveland Medical Library, accompanied by an invitation from Harris R. C. Wilson inviting any physicians who desire to attend to be present.

Dr. Updegraff then excused himself because of an emergency, and in the absence of the Vice-president, asked Dr. A. B. Walker of Canton to take the chair.

Program:

1. Practical Gynecological Suggestions, by W. H. Humiston, M. D.

When the common causes peculiar to women are recognized and properly cared for gynecologists will have little to do. There are four main causes of practically all gynecological diseases, *i. e.*: (a) injuries and infections at childbirth; (b) abortions, induced or otherwise; (c) gonorrhoeal infections; (d) malignant disease.

Parturition should be taken care of surgically; by that I mean that all the proper technique should be carried out. If lacerations occur and involve the circular artery, they should be repaired at once. In most cases of extensive lacerations the cause is the use of forceps before there is complete dilatation of the cervix. The use of forceps before complete dilatation is justifiable in eclampsia, since quick delivery is important.

Some so-called general surgeon practitioners believe that gynecology is not a specialty. In my opinion there is nothing in gynecology that a general surgeon cannot do, but he has not the time to develop his technique.

Dr. Humiston then cited a case in which improper obstetrics resulted in death. This patient, a primipara, was delivered by high forceps, resulting in a still birth and a complete perineal tear. A haphazard repair was done at the time of delivery. The patient was admitted to the hospital in a very poor physical condition, she had both an urinary and rectal fistula. Her weakened condition did not justify an operative procedure at this time, and general supportive and palliative measures were employed. She improved remarkably; within two weeks the urinary fistula granulated in. About three weeks after her admission she was seized with a sudden chill and marked shortness of breath, lethal exitus took place within a few hours. Autopsy revealed a very large pulmonary embolus. This calamity would easily be avoided had proper obstetrics been instituted.

Case No. 2. Patient aet. 26. Menstruation began at 15 years and was very painful ever since. At 20 years she was treated for Bright's disease, since she complained of pain in her back. The physician who had been taking care of her finally sent her to an osteopath. Two years later she had an acute mastoiditis, for which she was operated and relief obtained. At 24 years she complained of pain in her right side; she took treatment for a short time and felt somewhat relieved. At 25 years she had an attack of typhoid fever and was confined to her bed for four weeks. Two months later she had hemaetemesis, and a diagnosis of gastric ulcer was made, for which she was treated medically for four weeks. Finally, a gastro-enteros-

tomy was done. Sixteen months later she again had vomiting of bile and was operated on for a vicious circle. A few months later the pain returned in her right side and she was operated for appendicitis. Shortly after this operation a laparotomy was done for the relief of an intestinal obstruction. One year later she again complained of stomach trouble; X-ray showed the food passing through the pylorus. Another operation was then performed and the gastro-enterostomy opening closed. No improvement.

Upon examination I found a retroflexed uterus which was not freely movable. At operation a retroflexed uterus was found bound down with dense adhesions; there was also a large ovarian cyst on the right side. The uterus was freed and placed in its proper position and the cyst removed. Since the operation she has gained in weight and has been very comfortable. If this patient's symptoms had been properly investigated all her previous operations would have been avoided.

Discussion by A. J. Skeel. Discussion closed by Dr. Humiston.

2. The Treatment of Dysmenorrhea, by W. H. Weir, M. D.

Dysmenorrhea being a symptom, and not in itself representing the effect of any pathological condition, may be due to any abnormality of the pelvic organs or to some general systemic cause. The cases of dysmenorrhea which I wish to refer to are those in girls and young women in whom tumor formation or obvious inflammatory lesions can be excluded. A marked ante flexion is an exceedingly common cause of dysmenorrhea, and the uterus is usually small and undeveloped. The rational procedure, therefore, is to straighten out the flexion to permit a more ready exit for the menstrual flow. We usually dilate the cervical canal and do a curettage, partly for its stimulating effect and also on the chance that the mucosa itself may be abnormal. Most cases are benefited by this procedure, but in a number of instances the pain returns in a few months. Examination will reveal the ante flexion apparently as bad as before. Some other method of treatment must therefore be employed. Before undertaking an abdominal suspension, or one of the various round ligament operations, we employ the stem pessary. This has given most favorable results and is therefore generally used. I prefer using the Carstens type of spring pessary, since it offers no obstruction and its narrow diverging blades permit it to lie loosely in the uterine cavity without being expelled. A pessary of suitable length should be used, long enough to reach well up to the fundus. These pessaries may remain in situ for long periods. It is my practice to leave them in for six months; during this time an occasional examination is made to see that it is being properly retained and causing no trouble. In most cases this length of time is sufficient to produce permanent relief. In married women the pessary is also used with excellent results for sterility, this condition being often due to the same cause as the dysmenorrhea, viz., an undeveloped uterus.

Retrodisplacements, when causing dysmenorrhea, may be corrected by the simple use of the retroversion pessary after displacement of the uterus. The use of a stem in conjunction with a retroversion pessary will often facilitate the holding of the uterus in its proper position, especially in soft, flabby uteri.

Follicular hypertrophy of the ovaries is one of the most difficult causes of dysmenorrhea with which we have to deal. Such ovaries may cause more or less continuous dragging pain, aggravated at the periods, but they may produce symptoms only at the menses. The treatment for this condition is very unsatisfactory. Corpus luteum tablets occasionally give relief. Puncture of all the follicles with the scalpel or cautery gives relief for several months, by which time a new set of follicles has matured and the former

condition of affairs has recurred. In women of more advanced age the induction of the menopause by the X-ray is very simple, satisfactory and free from risk.

Other causes of dysmenorrhea, such as imperforate hymen, atresia of the vagina, rudimentary uterine cornu, etc., are rare and must be dealt with according to the indications in each individual case.

In conclusion I wish to mention that a cure is possible in many of these cases and a large measure of relief in many more, if a proper investigation of the pelvic condition of these sufferers is insisted upon and measures for the correction of any abnormalities carried out, instead of the administration of mere palliatives which can do no permanent good.

Paper was discussed by J. L. Bubis, B. E. Sager, W. D. Fullerton. Discussion closed by Dr. Weir.

3. Referred Pain of Pelvic Origin, by Howard Dittrick, M. D.

Pain is a frequent complaint of woman at all periods of her life, as puberty begins we meet the pains of dysmenorrhea, later during her marital life the pains incident to gestation and infection, and toward the end the pains of advanced malignant disease.

Giles states that the normal pelvic organs do not possess sensation, and consequently the pain produced by disease is referred pain. When the cervix is grasped in a Volsellum forceps the pain is not felt in the cervix itself but is referred to the back. During pregnancy the kick of the foetus is not felt until the uterus is large enough to leave its impression on the anterior abdominal wall. Descent of the head through the dilated cervix frequently causes no pain; it is not until the head reaches the vagina that pain is produced by the stretching.

Disease of the tubes and ovaries causes a hyperalgesia of the lower part of the abdominal wall, and on digital examination this may lead to the erroneous impression that there is a tender ovary, when in reality we are dealing with a tender abdominal wall. Visceral peritoneum is insensitive, whereas the parietal peritoneum is exceedingly sensitive.

Pain in pelvic disease may be produced by muscular contraction, congestion and pressure. Dysmenorrhea associated with flexion, uterine polypi and inversion of the uterus usually cause pain due to muscular contraction. Retroposed subinvolted uteri, salpingitis, twisted pedicles cause pain due to congestion. Pressure pains are produced by incarcerated pregnant uteri, ovarian tumors or fibroids, pelvic cellulitis in the broad ligament, ectopic pregnancy.

Referred pain on one side which comes on at the menstrual period may be associated with prolapsed adherent ovaries. When it is not associated with menstruation it may be due to ectopic pregnancy or salpingitis. Lateral pain coming on acutely is usually due to an ovarian tumor with a twisted pedicle, ruptured tubal pregnancy or ruptured pyosalpinx.

Finally, I wish to emphasize the fact that in making a digital examination if we try to reproduce the pain which the patient complains of we will be able to arrive at a more intelligent conclusion.

4. Case Report: Extensive Perineal Hernia, by N. M. Jones, M. D.

Patient aet. 49 years; multipara. Three years after the birth of her last child she developed a complete uterine prolapse. An attempt was made to correct this condition by a vaginal hysterectomy, but the vagina soon everted and she was again in the same condition as before.

Examination revealed a complete eversion of the vagina; its surface was ulcerated and the sac thus formed contained loops of intestine. The infection and erosion of the vagina was first taken care of. Finally a repair of the pelvic floor was made so as to carry the introitus up under the symphysis, thus taking it out of the axis of pressure. An anterior colporrhaphy was not necessary, because the cystocoele was corrected by pulling up of the vagina in its suspension. The suspension was done by the suturing of the dome of the vagina to the rectus muscle.

Paper discussed by W. H. Humiston and J. E. Tuckerman. Discussion closed by Dr. Jones.

The meeting adjourned at 10:00 P. M. to the Library reading rooms for the social meeting and refreshments.

CLINICAL AND PATHOLOGICAL SECTION

The one hundred and twenty-fourth meeting of the Clinical and Pathological Section of the Cleveland Academy of Medicine was held April 6, 1917, at the Cleveland Medical Library. Dr. Alfred S. Maschke, Chairman.

1. Demonstration of X-ray Plates from a Case of Oesophageal Diverticulum, by H. B. Corlett, M. D.

Patient a female, aet. 28. Past history negative for anything bearing on the present condition. No history of any external injury or the swallowing of any irritant. At 22 years of age patient had an attack of acute pain after swallowing a few mouthfuls of food. The pain radiated at first from beneath the sternum and then became general. The pain continued until the patient vomited. Morphia was given, but had no effect. She had repeated attacks similar to this at varying intervals up to the present time. She was sent to the hospital for X-ray of stomach for suspected ulcer. Fluoroscopic examination and X-ray showed normal gastric peristalsis and normal filling of the duodenal cap. A fluoroscopic examination while the patient drank the buttermilk and barium showed a diverticulum in the lower part of the oesophagus. All the buttermilk was diverted into the sac until it was filled and then the overflow entered the stomach. The pouch emptied itself in ten minutes and then could not be seen by the fluoroscope. X-ray plates were shown, taken when the pouch contained the maximum amount of buttermilk and barium.

2. Case Report; Self-amputation of the Last Phalanx of the Index Finger and Evulsion of the Flexor Tendon, by I. I. Yoder, M. D.

Patient, Miss K., aet. 17, working at a knitting machine when the index finger was caught in the machinery. She made a convulsive effort at extricating it. The terminal phalanx of the finger was torn off and with it came the whole of the flexor tendon, the tendon and muscle separating at the musculo-tendinous junction. The skin was torn so that the stump was covered with skin flaps in about the usual manner. The recovery was uncomplicated.

The speaker reviewed very briefly the literature on the subject and spoke of the scarcity of reports of similar cases. All such cases are in British and French journals. All the cases were due to traction on the tendons without muscular contraction. Muscle resists traction better than tendon and separation usually takes place at the musculo-tendinous junction. The specimen was shown with the long piece of the flexor tendon attached.

3. Reports of Cases and Experience in the Use of Dakin's Solution and Ambrine, by N. C. Yarian, M. D.

For details of the preparation of Dakin's Solution reference was made to the *Journ. A. M. A.* for Dec. 19, 1916. Its essential component is the sodium hypochlorite which forms 0.5% of it. It is isotonic with blood or nearly so and markedly antiseptic. Dakin's solution may be used in any kind of infected wounds. In superficial wounds it is sufficient to clean the wound thoroughly, protect the surrounding skin with vaseline and apply gauze well moistened with the solution. A light dressing is then put on. For deep wounds, especially compound fractures and deep lacerations, Dakin's Tubes are excellent. The tubes must be inserted to the bottom of every sinus. Any openings for drainage should be made on the upper surface so it may hold some of the solution. The tubes should be separated from the sides of the wound by gauze to prevent clogging of the holes with exudate. The solution should be applied every two hours, night and day, enough being used to thoroughly moisten the dressing. In the case of the tubes sufficient solution is injected through them every two hours to flush out the sinus. The ordinary soft rubber ear syringe is excellent for this purpose. The tubes should be removed every twenty-four hours and fresh sterile ones inserted. The advantages of the use of Dakin's Solution are the freedom from pain and infection, and the healthy granulation secured by its use. A wound treated with Dakin's Solution seems to be more than usually susceptible to secondary infection in case the solution is stopped. There is usually no irritation of the skin, but it is well to protect the skin with gauze or bandage impregnated with vaseline.

Ambrine is a combination of waxes that has gained much prominence in the present war. Its formula has not been made public, but a combination that gives equally good results is as follows:

Paraffin (hard)	70 parts
White wax	20 parts
Rosin	10 parts

It is perhaps an advantage to reduce the rosin to 5 parts, as then there is less precipitate in the melting container. (The term Ambrine is here used to designate the above formula, although it is not the genuine Ambrine.)

The advantages of its use are chiefly the quick relief from pain and its quality of not adhering to the granulations. Healing takes place very rapidly and sloughs separate early and come away without pain. The absence of contracting scars is remarkable. It may be used on any granulating surface. In infected burns it is well to clean out the infection with Dakin's Solution and then use the Ambrine.

Technique: The surface is thoroughly cleaned with saline or hydrogen peroxide. The wound and the surrounding skin is then dried as completely as possible with cotton and ether. Absolute dryness is very essential to favor the adherence of the Ambrine and to inhibit bacterial growth. An electric hair dryer is almost a necessity to obtain this end.

The Ambrine is heated in an ordinary cereal double-boiler and then applied at 145 degrees by means of a spray or a brush. It cools and hardens at once. A half-thickness of cotton-wadding is then applied and then another coating of Ambrine. The dressing should be removed every twenty-four hours. The success of the treatment depends on the detail with which the exact technique is followed.

Cases were shown illustrating the excellent results of this method of treatment.

In the discussion Dr. Webb P. Chamberlin reported very excellent results with Dakin's Solution. He treated temporarily with iodine, two cases formerly dressed with Dakin's Solution and the wounds quickly became infected. On returning to Dakin's Solution the infection cleared up very quickly and healing progressed rapidly. He emphasized the absence of contracting scars when Ambrine was used. Together, Ambrine and Dakin's Solution form an excellent treatment, especially for burns.

Dr. H. E. Mitchel reported excellent results, especially when the Dakin's Solution and Ambrine were used together.

Dr. Follansbee emphasized the importance of the Carrell method and raised the question whether the good results were not due more to the method than to the Dakin's Solution. He reported one case where he used normal saline by the Carrell method with excellent results. He also called attention to the importance of keeping everything sterile and of having accurately standardized hypochlorous solutions.

Dr. Yarian in conclusion pointed out the importance of being sure of the hemostasis where Dakin's Solution is used since the solution tends to dissolve protein rather than coagulate it and thus may loosen small clots. He also mentioned that in applying Ambrine to several patients the same brush may be used since the brush does not actually come in contact with the wound and the high temperature of the Ambrine keeps it sterile.

4. Case Report: Tumor of the Pons, by A. W. Lueke, M. D.

Dr. Lueke rapidly summed up the points of diagnosis of a pontine tumor. Focal symptoms are usually present. Papilloedema is usually wanting and signs of vagus involvement are rare. Conjugate deviation is variable. Convulsive attacks are common and may be associated with sensory changes. Involvement of the auditory nerve is rare.

Case. Patient, a female 37 years of age, was taken with a sudden attack of dizziness on the street. She was treated for many and varied conditions in the twelve months between the onset and the time she came under observation here. Symptoms when first seen were, persistent and severe headache and inability to walk. Neurological examination showed edema of the optic disc on the right. Some nystagmus and convergent strabismus. Paraesthesia of the fifth nerve on the right and paresis of the seventh. The eighth, ninth, tenth, eleventh, twelfth nerves were normal. Reflexes were normal. There was a history suggesting ataxia. On these signs a diagnosis of pontine tumor was made and operation advised for the relief of pressure. At operation both posterior fossae were exposed, showing a very tense dura. At autopsy there was found to be a great increase in the cerebro-spinal fluid and a tumor about 2 cm. in diameter was discovered half buried in the pons. Microscopical examination of the tumor showed a small round cell sarcoma.

A specimen was shown of the tumor and its site in the pons.

5. Treatment of Tuberculosis of the Spine, by Geo I. Bauman, M. D.

Dr. Bauman outlined the evolution of the treatment of tuberculosis of the spine, mentioned McKenzie, who in 1906 advocated rest and the recumbent posture, Lovett who further emphasized it in 1908, and last mentioned Hobbs and Albee who advocated the operation that bears the name of the latter.

The marked decalcification of the bodies of the vertebrae leaving no support except that afforded by the soft parts makes absolute fixation essential. Corsets and braces do not attain this end. The patient must be recumbent and in hyperextension. This may be secured by various means, but a plaster bed or a celluloid bed is perhaps the best. The patient should be kept in this for a long period of time, usually about a year, to allow good consolidation to take place.

The criteria by which one is guided in allowing patients to be up are these: (1) The presence of calcified material in the affected bodies as determined by the X-ray. (2) The periodic tracing of the spines. (3) Absence of fever. (4) The behavior of the patient. During the acute stage the patient, especially if a child will lie perfectly quiet. But when he begins to recover he moves more and more freely till the confinement on the bed becomes irksome. He may then be gradually let up and a celluloid jacket applied. The small amount of muscular atrophy in these cases is surprising.

Helio-therapy is very good. At Rainbow Hospital they achieve a general pigmentation for six months of the year and a local one for the entire year. At the beginning the area exposed and the time of exposure must be limited. Both are gradually increased until the entire body is exposed for the whole day. Usually the patient improved when tanning sets in. To avoid relapse there should be a month of sun treatment every year.

In the treatment of abscess aspiration should be the last resort and then observing strict asepsis. Avoid use of injections. Helio-therapy is the best. Watch the teeth, tonsils and ears. Diet should be rich in vegetables.

The operative treatment is only a small part of the general treatment. Fixation is the essential thing and the Albee operation is but one means of attaining this—an internal splint instead of an external one. Tuberculosis of the spine is but a local manifestation of a general disease and should be treated as such.

EXPERIMENTAL MEDICINE SECTION

The ninety-fifth meeting of the Experimental Medicine Section of the Academy of Medicine was held April 13, 1917, at the Cleveland Medical Library, Dr. H. T. Karsner presiding.

Program:

1. **The Influence of Age on Spleen Transplants**, by David Marine, M. D., and O. T. Manley, M. D.

Up to date we have made 82 homografts and 52 autografts. Homografts are transplants of spleen from one animal to another of the same species. Autografts are transplants done in the same animal.

We first used adult rabbits and were quite unsuccessful, when we compare them to the successful grafts of the thyroid gland. Careful asepsis was carried out in all experiments. The entire spleen was removed and small fragments were planted into the subcutaneous tissues of the abdomen. When 26-day-old rabbits were used the autogenous grafts all lived and grew quite rapidly. Rabbits over 1 to 2 years of age were then used but the transplants did not grow. As to what the age influence is due to I have no explanation. These young rabbits grow very rapidly and their increase in size may be due to their gain in weight, or to the compensatory hypertrophy of the transplanted fragments. The bone marrow takes up the function of the spleen very rapidly in the young animals, whereas it does not do so in the old rabbit. These spleen transplants have all the characteristics of normal splenic tissue.

2. **A Note on the Golodetz Reaction in Detecting Cholestrin and Other Lipoid Bodies in Tissue Sections**, by H. R. Wahl, M. D.

Lately the lipoids have been taking a prominent part in various pathological processes. They are recognized with difficulty in sections, since they cannot be brought out with the ordinary histological methods. By lipoids I mean substances soluble in absolute alcohol, acetone, ether, excluding the volatile and neutral fats.

The Golodetz reaction is rarely mentioned by workers who have tried to stain tissue sections. Apparently this reaction is a test for cholestrin, being a modification of the reaction of iodine and sulphuric acid.

In working with sections of Gauchet's disease I found this method very satisfactory. It is also of value in studying sections of xanthoma, and chronic inflammatory processes. In all these the reaction comes out quite distinctive, being of a deep brownish red color. If the cholestrin is pure the reaction comes out more strongly. Other lipid substances will also give the reaction if the sections are allowed to stand in the solution over night. Fat also takes the reaction, but fat can be eliminated by other fat stains. I modified the technique somewhat by immersing the sections in a weak solution of Lugol's for five minutes, then spread the section out on a slide. The solution is then allowed to drain off, after which they are put into a slightly stronger solution of sulphuric acid.

3. The Production of Lactic Acid as the Result of Intravenous Injections of Alkali, by Prof. J. J. R. Macleod, M. E. Fulk, H. J. Knapp.

During the last two months we experimented on rabbits. Light anesthesia was used and a 5-10% solution of sodium carbonate was injected into the femoral vein at the rate of 1 c.c. per minute. The normal amount of lactic acid in the urine of one rabbit was 10 mg. per 100 c.c.; in the other it was 60 mg. per 100 c.c.

In the one it increased from 10 to 760 mg., in the other from 60 to 333 mg. per 100 c.c., after sodium carbonate was administered. Along with this determination we estimated the H ion concentration of the blood and found a marked diminution.

There is one point of interest in connection with the disappearance of dextrose in the blood when alkalies are injected. The diminution can be accounted for by the transition of dextrose into lactic acid. On counting up the total amount of alkali injected and acid excreted, at least one-tenth has been neutralized in this way.

4. A New Method for the Determination of the Dead Space and CO Percentage in Alveolar Air, and Some Practical Applications of the Method, by R. G. Pearce, M. D.

It is very difficult to determine accurately the capacity of the dead space and the percentage of CO₂ in the alveolar air. The methods hitherto used are open to serious criticism. Recently I have devised a method for the determination of these factors which is based upon the diluting effect which the dead space air has upon the percentage of CO₂ or oxygen in the expired air. The greater the depth of the expiration, the time element being kept constant, the less important does the dead space air become as a diluting factor of the alveolar air.

The application of this method to the estimation of the dead space fails to confirm the conclusions of Douglas and Haldane, who believe that the capacity of the air passages or the physiological dead space increases greatly during exercise. There is no evidence that there is a difference in the dead space for CO₂ and for O, as claimed by Haldane and Henderson. The carbon dioxide pressure in the alveolar air was found to be lower than normal in some patients suffering with fibrinous pneumonia. In these cases cyanosis was present, but there was no evidence of cardiac impairment, air hunger or acidosis. Patients with pneumonia, who had no cyanosis had a normal or high percentage of CO₂ in the alveolar air. An explanation of this phenomena may be found in the assumption that the pulmonary circulation continues thru the consolidated lung after its respiratory function has failed. This condition would supply venous blood to the left ventricle, which acting as a diluting agent to the arterial blood would increase the tension of CO₂ in the

arterial blood. The increased tension of CO_2 in the blood reaching the brain stimulates the respiratory center with the result that the minute volume of the respiration is increased and the percentage of CO_2 in the alveolar air is reduced. The blood passing through the healthy lung therefore has a lower than normal content of CO_2 to compensate for the high content of CO_2 in the venous blood with which it is mixed in the left heart. However, since the blood which passes thru the healthy lung is fully saturated with oxygen no compensatory mechanism can be established by which the oxygen content in the mixture of venous and arterial blood in the left heart can be brought to a normal oxygen tension. The blood therefore appears cyanotic. The condition is somewhat analogous to that found in congenital heart disease.

5. Carbon Dioxide Acidosis, by R. W. Scott, M. D.

It is difficult to determine the retention of carbon dioxide in a patient, since arterial blood is difficult to get. Hitherto we have had very little information in human cases.

Acidosis means an actual increase in the H ion concentration of the blood. There is a difference between acidosis and a detectable acidosis. A patient may have all the signs of acidosis, but we will be unable to demonstrate it. Living cells are extremely sensitive to carbon dioxide, and normal cellular activity produces changes in the H ion concentration by producing acid by-products.

The question one often asks is, what made respiration an automatic process? Although it is affected reflexly from various parts of the body the chief ones affecting it are the Vagi and the H ion concentration of the blood. The latter is the most important. The respiratory center will respond to a slight addition of acid to the blood in dilutions that are not detectable.

The first symptom of an increase in the H ion concentration would be hypernoea, since the respiratory center is so extremely sensitive to changes in the acidity of the blood. It is better to look to the respiration as a factor in determining acidosis rather than by physical chemical methods.

We tried using anesthetics of various kinds in our experiments, but were unable to get any response to acid administration, since anesthetics depress the respiratory center and it is impossible to get proper reactions. If decerebrated animals are used the results are much more satisfactory. When decerebrated animals are allowed to rebreathe their expired air we invariably find an increase of the carbon dioxide and H ion concentration of the blood.

We can increase the acidity of the blood by injecting lactic or phosphoric acid. These substances are not excreted by the lungs. There will be an increase of the H ion but a low percentage of carbon dioxide. The respirations will be increased and the carbon dioxide eliminated. This condition of a low carbon dioxide has given rise to a term "compensated acidosis." If the carbon dioxide is low something is keeping it low, and that is the respiratory center which is stimulated by the increase in the H ion concentration.

In cardiac cases dysnoea is the first subjective symptom. If the circulation in the lung is impaired there is an increase of carbon dioxide in the blood and consequently a stimulation of the respiratory center. If an added factor steps in like consolidation or compression of the lung, a reaction will be interfered with and there will be a marked increase of the carbon dioxide in the blood.

COUNCIL MEETING

At a meeting of the Council of the Academy of Medicine held Tuesday, April 10, 1917, at the University Club, the following members were present: The President, Dr. Updegraff, in the chair; Drs. Bernstein, Birge, Bruner,

Follansbee, Humiston, Klaus, McDonald, Sanford, Sawyer, J. J. Thomas, J. E. Tuckerman, W. H. Weir, and by invitation M. J. Lichty.

The minutes of the last meeting were read and approved.

On motion the following were elected to active membership in the Academy:

Reed W. Anderson, T. S. Keyser, E. F. Kieger, B. F. Lowry, Wm. B. Markus, J. E. McClelland, J. C. Simon, John M. Steel, Robt. W. Williams.

On motion the names of the following applicants for active membership were ordered published:

W. W. Donaldson, F. A. Euler, F. W. D. Finke, Chas. H. Garvin, A. B. Grossman, E. E. Kepner, C. H. Kocinski, C. F. Mitchell, F. B. Rosinski, Louis Rubin, M. H. Shipley, S. J. Spotanski.

The names of the following applicants were reported by the membership committee, but were referred back for further consideration:

Anthony F. Ciogotura, K. G. Cieslak.

On motion the following were transferred to associate membership:

Geo. N. Stewart, Helen Hempstead Furrer, J. J. R. Macleod.

The Secretary read the list of those suspended for non-payment of dues.

Dr. Wm. Evans Bruner reported for his committee the names of twelve members for delegates and alternates. On motion the report of the committee was approved and the following appointed delegates and alternates:

Delegates—R. K. Updegraff, J. E. Tuckerman, W. E. Lower, Geo. E. Follansbee, H. L. Sanford, F. E. Bunts.

Alternates—A. J. Skeel, J. J. Thomas, F. J. Wood, J. E. Cogan, H. A. Berkes, S. L. Bernstein.

On motion Dr. H. O. Ruh was appointed the other member of the Committee on Public Health.

Dr. Bernstein reported without recommendation the returns of the questionnaire on the Physicians' and Surgeons' Information Exchange.

On motion the report of the committee was received, the committee discharged and the Secretary directed to communicate to Mr. Secrest that the Council does not wish to enter into official relations with the Exchange.

The Secretary brought up a suggestion made by Dr. Brokaw over the telephone that the Academy as a body offer its services gratis to dependents of enlisted men. In discussion it was the sense of the Council that such a matter was a question of individual decision. On motion the question was laid on the table.

Dr. Updegraff reported that he had extended an invitation in the name of the Academy to the American Nurses' Association to meet in Cleveland next year. Similar invitations were being extended by other civic organizations.

A communication from the Ohio State Medical Association relative to matters to come before the House of Delegates was read and freely discussed by State Councilor Lichty and others.

The question of changing the date of the next regular meeting from the 20th to the 27th for the purpose of joining with the health department in a general meeting to be addressed by Dr. Haven Emerson, Health Commissioner of New York City, was discussed.

On motion the matter was referred to a committee with power to act, consisting of Dr. J. J. Thomas and Dr. Updegraff, to confer with Dr. Bishop.

Dr. Follansbee touched upon some phases of medical legislation, stating that it was his belief that the profession was fortunate in that no vicious bills passed the legislature, this year. He stated however that it was his belief that the question of professional licensure should be entirely revamped.

On motion the Secretary was ordered to communicate to Mr. Sheridan the thanks and appreciation of the Academy for excellent services during the legislative session just passed.

BOOK REVIEWS

Clinical and Laboratory Technic. By H. L. McNeil, A. B., M. D., Adjunct Professor of Medicine and Instructor in Physical Diagnosis, University of Texas Medical School, Galveston, Texas. Eighty-four Pages, Illustrated. C. V. Mosby, St. Louis, 1916. Price, \$1.00.

There is no doubt such outlines as contained in this volume are useful to the students, clinical clerks and hospital internes in the localities in which the book or outline is published. There is, however, a question as to the usefulness of such a work to those engaged in institutions or schools in other communities.

The nature of routine history taking and recording the physical examinations in one locality, while the same, in general, differs considerably in its particular points in the various centers.

The use of certain laboratory tests and certain stains which, without doubt, give excellent results, may not be the one advised or used in other schools or localities.

Such an outcome, therefore, has a limited field of usefulness. It is really an outline to be used in the school from which it springs. Here, and to the student of the school, it, without doubt, serves a very distinct purpose.

To students abroad its field of usefulness, however, is limited, it being neither an outline which they can follow nor a reference book to which they can turn for complete information.

H. O. R.

Practical Medical Series. Vol. VII, 1916. Obstetrics. Edited by Joseph B. DeLee, A. M., M. D., Professor of Obstetrics, Northwestern University Medical School, Chicago. The Year Book Publishers. Price, \$1.35.

The various numbers of the annual ten volumes that compose this excellent digest have been reviewed so often in these columns that little need be said of the purpose and scope of the publication. Dr. DeLee presents an abstract of the world's obstetrical literature for the past year that is fully up to his usual high standard.

The sad effects of the great war upon the advance of knowledge is vividly illustrated by the very few articles of Teutonic origin that came to the editor for review. Of 160 articles abstracted, only 24 were published in Germanic periodicals. However, we need not be greatly ashamed of the American and English contributions.

Some fads of the past are sinking into their more normal position. The Abderhalden test for pregnancy seems to be definitely interesting as a phenomenon, but so uncertain clinically as to be valueless for certain or even probable diagnostic use. The shrinkage of the great claims formerly made for pubiotomy is also interesting. Williams now practically limits its application to funnel-shaped pelvis in young women.

Among the new ideas the year has produced of seeming value, one may mention the creatinin injection test for the estimation of the kidney function in toxæmia cases. Another idea is that of auto-transfusion of the blood found in the peritoneal cavity in ruptured ectopic cases. Good results from this are reported, but the risk seems great. Perineal nerve blocking in labor is said to be easy, and to give a painless second stage.

Of course, some wild ideas float around in the literature as usual, such as performing hysterotomy (abdominal) for a retained placenta. Dr. DeLee can be relied upon to interject a sarcastic comment upon such articles.

J. T. S., Jr.

Diseases of the Skin. By Henry W. Stelwagon, M. D., Ph. D., Professor of Dermatology in the Jefferson Medical School, etc. Eighth Edition, Revised. W. B. Saunders Company, Philadelphia, 1916. Price, \$6.50.

The new edition of this standard work shows many changes and much new matter on such subjects as occupational dermatoses, paraffinoma, etc. There are thirty-five new cuts and many subjects have undergone changes, transferences and amplification as in the past; this book is to be recommended to students and medical practitioners as a standard and as a credit to American medicine. H. N. C.

The Practical Medicine Series, Volume IX, Skin and Venereal Diseases. By Oliver S. Ormsby, M. D., and James H. Mitchell, M. D. Series 1916. The Year Book Publishers, Chicago. Price, \$1.35.

Under the direction of Dr. Ormsby and his associate, Dr. Mitchell, this little book is becoming more and more valuable for the busy practitioner who wishes to keep up to date on some of the newer advances in dermatology and syphilis. Genito-urinary diseases are also considered in this volume, and we feel it to be unfortunate that they are mixed in with an entirely separate subject. Would it not be better to devote another volume to them, for the field is certainly large enough? Naturally, in a volume covering so much ground, mistakes are bound to creep in, but we would recommend the book very highly, as it gives in a short space not only the work of others but also the personal views of the reviewers. H. N. C.

ACKNOWLEDGMENTS

Clinical and Laboratory Technic. By H. L. McNeil, A. B., M. D., Adjunct Professor of Medicine and Instructor in Physical Diagnosis, University of Texas Medical School, Galveston, Texas. Illustrated. C. V. Mosby Company, St. Louis, 1916. Price, \$1.00.

Practical Urinalyses. By B. G. R. Williams, M. D., Director Wabash Valley Research Laboratory, Author of "Laboratory Methods," etc. Illustrated. C. V. Mosby Company, St. Louis, Mo., 1916. Price, \$1.25.

Handbook of Suggestive Therapeutics, Applied Hypnotism, Psychic Science. A Manual of Practical Psychotherapy, Designed Especially for the Practitioner of Medicine, Surgery and Dentistry. By Henry S. Munro, M. D., Omaha, Nebraska. Fourth Edition, revised and enlarged. C. V. Mosby Company, St. Louis, Mo., 1916. Price, \$5.00.

Cataract Senile, Traumatic and Congenital By W. A. Fisher, M. D., Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College. Published by Chicago Eye, Ear, Nose and Throat College, Chicago, 1916. Price, \$1.50.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1916, with the comments that have appeared in the *Journal*. Price, 50c.

New and Nonofficial Remedies, 1917, containing descriptions of the articles which have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association, Chicago, 1917. Price, \$1.00.

Anatomical Names, Especially the Basle Nomina Anatomica ("BNA"). By Albert Chauncey Eycleshymer, B. S., Ph. D., M. D., Head of Department of Anatomy, University of Illinois, Assisted by Daniel Martin Shoemaker, B. S., M. D., Professor of Anatomy, St. Louis University. With Biographical Sketches by Roy Lee Moodie, A. B., Ph. D., Assistant Professor of Anatomy, University of Illinois. William Wood & Company, New York, 1917. Price, \$4.50.

Food and the Principles of Dietetics. By Robert Hutchison, M. D., Edin., F. R. C. P., Physician to the London Hospital; Physician with Charge of Out-Patients to the Hospital for Sick Children, Great Ormond Street. Author of "Lectures on Diseases of Children," "Patent Foods and Patent Medicines," "Applied Physiology," Joint-Author of "Clinical Methods." With Plates and Diagrams. Fourth Edition William Wood & Company, New York, 1917. Price, \$4.00.

Medicine and Surgery (New Medical and Surgical monthly), Vol. 1, No. 1, March, 1917. Philip Skrainka, M. D., Editor-in-Chief, Medicine and Surgery Publishing Company, St. Louis, Mo. Price \$3.00 a year.

Transactions of the College of Physicians of Philadelphia, Third Series, Vol. XXXVIII. Printed for the College, 1916. Philadelphia.

Text-Book of Ophthalmology. By Hofrat Ernst Fuchs, Professor of Ophthalmology in the University of Vienna. Authorized Translation from the Twelfth German Edition. Completely Revised and Reset, with Numerous Additions Specially Supplied by the Author and Otherwise Much Enlarged. By Alexander Duane, M. D., Surgeon Emeritus, Knapp Memorial Hospital, New York With Four Hundred and Sixty-two Illustrations. Fifth Edition. J. B. Lippincott Company, Philadelphia and London. Price, \$7.00.

Municipal Ordinances, Rules and Regulations Pertaining to Public Health, 1915. Reprint No. 364 from Public Health Reports 1915-1916. United States Public Health Service, Rupert Blue, Surgeon General. Government Printing Office, Washington, 1917.

A Reference Handbook of the Medical Sciences, Embracing the Entire Range of Scientific and Practical Medicine and Allied Science by Various Writers. First and Second Editions Edited by Albert H. Buck, M. D. Third Edition, Completely Revised and Rewritten, Edited by Thomas Lathrop Stedman, A. M., M. D., Complete in Eight Volumes. Volume Seven, Illustrated by Numerous Chromolithographs and Four Hundred and Sixty-nine Half-tone and Wood Engravings. William Wood & Company, New York, 1917. Price, \$7.00

Localisation et Extraction des Projectiles. By L. Ombredanne and R. Ledoux-Labard. *Precis de Medicine and de Chirurgie de Guerre.* Masson et Cie, editeurs, 1917. Price, 80c.

The Internal Secretions. Their Physiology and Application to Pathology. By E. Grey, M. D., Member of the Academy of Medicine of Paris, Professor of Physiology in the College of France, etc. Translated from the French and Edited by Maurice Fishberg, M. D., Clinical Professor of Medicine, New York University and Bellevue Hospital Medical College; Attending Physician, Montefiore Home and Hospital for Chronic Diseases. Paul B. Hoeber, New York, 1917. Price, \$2.00.

Cancer, Its Cause and Treatment. By L. Duncan Bulkley, A. M., M. D., Senior Physician to the New York Skin and Cancer Hospital, etc. Vol. II Paul B. Hoeber, 1917. Price, \$1.50.

The Starvation Treatment of Diabetes, with a Series of Graduated Diets. By Lewis Webb Hill, M. D., Junior Assistant Visiting Physician, Children's Hospital, Boston; Alumni Assistant in Pediatrics, Harvard Medical School, and Rena S. Eckman, Dietitian, Massachusetts General Hospital, Boston, 1911-1916. With an Introduction by Richard C. Cabot, M. D. Third Edition. W. M. Leonard, Publisher, 1917. Price, \$1.00.

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THE PAST AND THE PRESENT IN ABDOMINAL SURGERY*

BY JOHN B. DEEVER, M. D., LL. D.

PHILADELPHIA

Sensible of the honor conferred upon me by the invitation to address the Alumni of the Western Reserve University, I have selected as my subject "The Past and the Present in Abdominal Surgery."

A glance at the past in Abdominal Surgery brings before our vision a bleak day in December in 1809, when a woman, "with her pendulous abdomen resting on the pommel of her saddle," rode sixty miles into Danville, Kentucky, to seek relief for an ovarian tumor that was exhausting her vitality. She had not come in vain. The tumor was removed and McDowell's name has become historical in the household of the surgeon for all time. While the idea of ovariectomy may not have been original with McDowell, since it is known that during his studies under Bell, in Edinburgh, he had heard hints of the procedure, the originality of the achievement is his. Profiting by what he had imbibed from his teachers he seized the opportunity as soon as it presented itself. Today priority in achievement is a highly-prized honor, but it was not so in McDowell's time. He and his followers were obliged to suffer obloquy, and bitter and hostile criticism for their temerity. It took many years for ovariectomy

*Read before the Western Reserve Medical Alumni Association meeting, Cleveland, June 10th, 1916.

to gain favor here, and, more especially, abroad. It may have been forgotten, or perhaps ignored, since McDowell did not publish his results until he had successfully repeated the operation several times, that is to say about eight years after his first performance. In our country we find it next reported in 1821 by Markham Smith, Professor of Surgery at Yale. Smith seems to have been ignorant of McDowell's achievement, and also of the fact that a similar operation had been done in Germany in 1819. In England it had never been attempted before 1836, and in France before 1844. American records show that by 1850, thirty-six ovariectomies had been done by eighteen operators, with twenty-one recoveries and fifteen deaths.

We thus see that it took time and the overcoming of much prejudice for that procedure to gain favor. Today it is as difficult to find anyone to decry it as it was in those days to secure an advocate for it. Considering the boon that this one operative procedure alone has proven to suffering womankind, and its safety in the hands of the expert, does it not seem as though we might reverse the proverb and speak of angels rushing in, etc.?

Prominent among the successors of McDowell we find immortalized the names of Dunlap, Peaslee, Kimball, and the two Atlees. The latter especially worked hard, and against the most adverse circumstances, toward extending the benefits of the operation.

It was only in the field of gynecology and obstetrics that early abdominal surgery was at all active, and with it will always be associated the names of Dewees, Meigs, Clarke, and later, Marion Sims, practically the first specialist in the diseases of women, whose procedure is little changed even today.

The art of surgery, like every other art, was not developed in a day, but very few of the arts have made such rapid forward strides in so comparatively short a time as has ours. Indeed, we may say that evolution here has proceeded by means of a revolution, the first great battle of which was won when Morton gave to the world the inestimable boon of anesthesia. Our indebtedness to Morton is fittingly recorded in the shaft that marks his grave in Mt. Auburn Cemetery.

"W. T. G. Morton. Inventor and Revealer of Anesthetic Inhalation. Before Whom in all Time Surgery was Agony. By

Whom Pain in Surgery was Averted and Annulled. Since Whom Science has Control of Pain."

The second and third steps in the evolution of modern surgery are, as you well know, Pasteur's discovery of the fermenting action of micro-organisms and Lister's practical application of the same to the treatment of wounds. How great is the impulse that these two momentous revelations have given to surgical methods it is useless for me to attempt to tell you. Before that time abdominal surgery was almost unknown, and since then it has become almost the surgeon's play-ground. So much so, indeed, that instead of the *odium medicus* attached to the man of former days who dared open the abdomen, surgeons of today are winning the gratitude of an ever increasing following in the ranks of suffering humanity. Even the small boy is glad to remember us in his prayers when, in the enjoyment of the pampering and coddling incident to convalescence from an operation for appendicitis, he asks the usual blessing on fond parents and friends, and in expressing his gratitude for favors received, concludes by saying, "and thank you, dear Lord, for our appendices."

A commanding figure in this new era of surgery is that of Mr. Lawson Tait, a man of marked originality, fearlessness, and dogged perseverance. His career was cut short in the prime of life by chronic disease, and death at the lamentably early age of 52 years. To us it sounds quite simple to say that when only twenty-seven years of age he removed an ovary for suppurative disease, or that he extirpated the uterine appendages to arrest the development of a bleeding myoma. But it must be remembered that this was then considered "an unwarranted exploit of surgical audacity." (Tait's.) Undaunted, however, he forged ahead in operative work on surgery of the pelvis. We owe to him the pathology of infection of the Fallopian tubes, the flap-splitting operation for the repair of the perineum, dilatation of the cervix for replacing the misplaced uterus, etc. In the next decade his first hepatotomy and his first cholecystostomy marked the beginnings of surgery of the bile and the gall tracts. Not the least of his contributions to the new surgery are the simplification of operative technique and, above all, the lowering of operative mortality by aseptic methods as opposed to Lister's

antisepsis. His controversy with Lister on this subject lasted until death claimed the Father of modern abdominal and pelvic surgery.

Another "militant advocate of the new surgery" was Joseph Price, whom we with justice and with pride may call the Tait of America. At the time of his entrance into the world of surgery, progress was somewhat hampered by the confusion in men's minds caused by the controversy of asepsis and antisepsis. Not only this, but like Tait, Price also had to contend against the conservatism of the surgeons and teachers in authority at that time, who either refused to accept the newer methods, or, if accepting them, did so merely as experiments. Like Tait, he remained callous to criticism and opposition, and with singular courage and tenacity of purpose he bent all his endeavors toward establishing the new surgery, sustained by the consciousness that his was a fight for science and for humanity. He impressed the profession more by the spoken than by the written word. "But his teaching was most inspiring and forceful at the operating-table. His clinic was thronged for years with young, ambitious and progressive surgeons from every part of the United States.

"He stripped from surgery all complicated paraphernalia and made technique simple and thorough. Every prominent surgeon in this country today demonstrates in his methods the impress of this master surgeon."

"Exalt his skill as you justly may," says one of his admiring pupils, "it was Price the sterling man which made him my beloved master."

The struggle for recognition happily is now over, and abdominal surgery has come into its own. The living pathology of today is revealing secrets that it was the dearest aim of our predecessors to divulge. Operative technique is reaching a plane of efficiency hardly dreamed of by them. The resection of various organs of the body, of different parts of the intestines, and the essential anastomosis of hollow viscera are daily occurrences in the life of the adept in surgery of today. These achievements, however, were not attained without much labor, numerous disappointments and unflagging zeal by the worthy followers of the pioneers in the field of science.

I fear no accusation of making invidious distinctions if I essay to mention at random a few names that occurred to me as I was thinking of what to say to you tonight; Wolfler, Billroth, Terrier, Fenger, Tuffier, Hartmann, Lecene, Moynihan, Alexander, Handley, Fitz, Senn, Mayo, Richardson, Murphy, and others; nor if I pay special tribute to the work of Murphy, whose name will ever hold a permanent place among this brilliant array of great lights.

To those that have passed on, let us silently and reverently drink the toast of affectionate and grateful remembrance; to those happily still among us, we gladly lift the joyous cup, and in all humility, with the psalmist we ask, "the work of our hands establish Thou it."

You have come together on this occasion to renew pleasant memories of student days, exchange experiences, and drink again of the waters of inspiration of your alma mater. Coming, as I presume you do, some from the remote villages, some from the larger towns, and others from the metropolis, you have doubtless all brought with you your individual problems as to the essentials of success. From a wide experience—how successful I shall leave it to others to say—I hope that I may be permitted to offer a few random suggestions as to the requirements in the training of the surgeon.

Of all the professions the practice of medicine—using the term in its wider sense—is perhaps the most honorable and the most beneficial to mankind. And it is therefore your duty to keep it free from any pretense to extraordinary powers, and by refusing to assume the cloak of mystery to come out into the open, waving the banner of true science as the flag of your calling.

There is no doubt that the last half century has witnessed wonderful strides in the art of healing, and in no branch of it more than in surgery. Lister's epoch-making introduction of antiseptics, in 1865, may be said to be the dawn of modern surgery.

With the probable exception of ovariectomy, abdominal surgery, for example, was almost unknown before Lister's time, while since 1867, it may be said to have become "almost the surgeon's play-ground." When we realize what has been accomplished in the realm of surgery since Lister's days and consider the brilliant group of men who have blazoned the way for you

and for me, we may well be proud of the days in which they flourished and the times in which we live, though the present be clouded by the grim spectre of war and strife. All that our predecessors accomplished, however, was not learned only in the class-room, or from text-books, or altogether within the confines of a more or less limited personal experience. They associated freely and frequently with their confreres on this and on the other side of the waters, visiting the clinics of famous masters in the art of healing here and abroad. Though German efficiency as we see it today is revealed to us in its most unwelcome aspect, we are free to confess that nowhere better than in Germany can the student who is eager for thorough training in all branches of medical science obtain what he seeks, and I would urge upon you to endeavor to combine German efficiency with American cleverness and resourcefulness in the pursuit of your profession.

The surgeon, always a necessary factor in civilized society, has in our own time become so important that his education, his character and his adequate support are matters of serious consequence to the entire community. How he comes to be what he is, how much is due to heredity, how much to environment, are questions of widespread interest.

The idea expressed by the familiar aphorism that painters and musicians are born, not made, is sometimes applied to the surgeon; but there is a great difference in the evidence offered to support the assertion. Biographers assure us that the prospective musician, even in childhood and under repressive influences, could sing melodiously and could elicit tunes from a cornstalk fiddle, while the painter, even in the first decade of his life, showed his strong artistic impulse by impressive pictures drawn with charcoal on shingles and fence boards. The boy destined to surgical renown offers no parallels for these exploits. He has no opportunity to foreshadow his career, for he has no chance to practice surgery. Whatever capacity he possesses must for the time remain dormant and unknown.

Doubtless the surgeon, like others, derives much from inheritance and, if fancy be given a free rein, it is easy to select a number of traits, mental and physical, which in combination will represent the type described by the title, "born surgeon," but any such representation finds little corroboration in the lives

of the world's greatest surgeons, the best operators, the most profound reasoners. The history of their youth, so far as we know it, shows them to have had sound health, good intellectual capacity and a well-balanced organism. They did not, like David Copperfield, wear upon their back a placard describing their characteristics and their acquaintances could not predict their future careers. In most respects their boy-lives were like those of their companions; but with the approach of manhood two qualities emerge into prominence. The first of these puts them on the right side of that line of cleavage which divides each rising generation into two groups; the efficient and the inefficient. That quality was the capacity and fondness for work. Whatever may have been the original motive for their diligence, they worked so hard and steadily that industry became habitual and continued so through their lives.

The second characteristic was a love for the science and art of surgery. This became a devotion so absorbing that they undertook with avidity the hardest tasks almost oblivious of the irksome and repulsive features of their pursuits. They did not clamor for an 8-hour day and if their eyes sought the clock face it was not to long for quitting time, but to regret the rapid revolution of the hands, because they found the day all too short for the absorbing and delightful labors in which they were engrossed.

Such were the primal, the basic qualities of the eminent surgeons of the past. Good training supplied the rest. The young man who possesses these fundamentals may hopefully adopt surgery as his vocation, feeling that he has the foundation approved by the experience of the great masters of the art and that the superstructure will not demand anything but what can be supplied by industry, perseverance and devotion.

He may not acquire wealth or attain a nation-wide fame. High distinction is the portion of but few. If it became common it would cease to be *distinction*; but he may reasonably expect to win an honorable, professional reputation and a position of prosperous independence. Besides these he will enjoy from month to month and year to year, as he pursues his way, the attraction, the satisfaction inherent in the work itself.

The qualifications above mentioned are so obviously necessary in those looking forward to our profession, that it seems

strange anyone lacking them would presume to take up its study and yet not infrequently one hears of some misguided youth who enters upon a course of medical study though from the start absolutely foredoomed to failure. Bricks can be made without straw, but not without clay.

Today as always the road to efficient surgery will be found to lead from the dissecting-room, and I may say back to the dissecting-room again and again. For it is both there and in the necropsy room that the student and the post-graduate obtain the practical training in the ability to differentiate diseased from normal tissue by sight and by touch—the *sine qua non* for the successful operator. And it is there that he comes to realize that the study of anatomy today does not, as in former years, mean the study of the human cadaver alone, but a comprehension of the cellular structural development and the normal and abnormal structure of organs, muscles, blood vessels, etc.—in short, that the study of anatomy, both normal and pathologic is the foundation of practical and experimental work in physiology, pathology, bacteriology, and physiologic-pathology and chemistry.

We owe much of the advance in exact surgical methods of today to the patient and painstaking investigations in the laboratory of pathology and its allied subjects. The surgeon of today and tomorrow cannot hope to be considered fully perfected in his chosen line of work unless he takes part in the researches that are being carried on in these indispensable adjuncts to his profession. The surgeon who is ignorant of bacteriologic and pathologic investigating methods must accept the reports of his laboratory assistants with the same blind faith in which the layman accepts his physician's prescription, that is, in terms which he is unable to interpret for himself.

It would seem like a work of supererogation to mention to a body of university students the importance and value of physiology—normal and abnormal, theoretical and practical—in the training of the surgeon. (What better evidence is needed of the practical value of physiologic experiments than Crile's epoch-making studies in surgical shock?) It may be possible to be a good medical man without possessing a wide knowledge of surgery, but the rule does not work both ways. The surgeon must be able to estimate his patient's powers of resistance, the symp-

toms of possible latent infective complications, the condition of the excretory organs, etc. Operate upon an advanced diabetic and you will be confronted with serious complications; operate in the presence of renal insufficiency and you will probably give the undertaker a job as the result of your ill-advised interference. You cannot always depend on the diagnosis made by someone else. I should say make your own diagnosis and thereby insure your prognosis. In fact for the surgeon, prognosis is to a great extent a question of diagnosis by the practitioner and one of *early* diagnosis. If the physician would only send us the small nodule on the breast as soon as it is detected instead of waiting until it attains a considerable size, or until pain indicates that in all likelihood it has lost its benign character, we could obtain permanent cures in at least 80 per cent of our breast cancers; that is, cures without recurrence, against less than half that number where operation is delayed. How many patients die an agonizing death from cancer of the stomach who might have been saved when the inaugural symptoms of gastric disease made their appearance! The wisdom of the watchful waiting policy is even more questionable here than elsewhere. It has been estimated that nearly 70 per cent of cases of cancer of the stomach present a previous history of gastric disease—especially ulcer—extending over a period of from one to twenty years or more. In my experience this obtained in 60 per cent of recent cases. Compare these facts with the low mortality of operations for these conditions—almost nil (0.98) for diseases of the breast, and 2.7 per cent for gastric and duodenal ulcer—and you will realize the truth of my statement that infinitely more lives have been lost by failure to diagnose or by belated diagnosis than by faulty surgery. *Qui bene diagnoscit, bene curat.* But it is not only for good immediate results that a thorough training in physiology is essential; it is also a prime factor in securing satisfactory end-results.

So the surgeon must necessarily be an accomplished and versatile man. He must not only possess a broad vision in the field of pathology, but he must also keep abreast with medical progress in general. The specialist is only too apt to be narrow in all relations of life, but mostly so in his own as a practitioner, and it were well indeed if both surgeon and internist could keep as closely in touch with the practice of each other's particular branch of medicine as with the specialty each has chosen

as his own. What I have said with regard to possessing a broad horizon in the field of science implies, of course, keeping well informed as to new methods and new discoveries, but it does not imply adopting the new, because it is new, or abandoning the old, because it is old; it also implies a healthy conservatism—seeking out the good and standing by it until one is sure that the next thing is better. You have probably heard this admonition numerous times, but it does not suffer by repetition. If in the course of your experience you should arrive at conclusions which are at variance with accepted tradition, prove the truth of your contention and stick to your guns in spite of sarcastic opposition and hostile—and oftentimes unjust—criticism. But, I repeat, prove your point—prove it by legitimate means and by legitimate figures. In demonstrating the correctness of your position you will naturally resort to animal experimentation, a recourse that is indispensable for the investigations of the expert and for the tyro in surgery, the antivivisectionists to the contrary notwithstanding. You will also be just as considerate of your dog-patient as you would be of a human patient, giving him the same post-operative care as that accorded his master. In these days of enlightenment it seems well-nigh superfluous to dwell on the priceless value of animal experimentation in the fields of medicine and surgery. To the young student animal experimentation affords, for example, a graphic means of learning the control of hemorrhage of every type, to mention but one of the primary requirements for any kind of operative work whatsoever; to the experienced surgeon it is the means of opening up new and untrodden paths in surgery, while for the research worker it is likewise indispensable for testing and demonstrating his discoveries in the prevention and treatment of disease. It seems just as futile at this late date to emphasize the numerous and ever-increasing benefits that have accrued to mankind as the result of experiments on animals—not to mention the good to the animals themselves in the control and cure of epidemics among live stock. Do we not see these results daily in the treatment of tuberculosis, diphtheria, rabies, etc., and in the valuable and life-saving procedure on the operating tables?

As for the numerous problems still awaiting solution—such as the cause of cancer, which is one of the most baffling questions of the day—and as for the untold possibilities the future

holds out in the betterment of our methods and in the conservation of life, shall we relinquish all these hopes because of the ignorance and maudlin sentimentality of the bigoted anti-vivisectionists? Shall we?

Let us presume that the student has had the training which I have merely outlined by these random thoughts, and that to some degree he has been familiar with the various avenues that diverge from the dissecting-room; the day now arrives when he must co-ordinate the knowledge acquired and apply the methods of relief so laboriously gained. It is here that elements of a more personal character come into play—judgment, coolness in the face of emergencies, manual dexterity, etc.; these can be acquired and retained by constant practice alone. "The master in surgery," it has well been said, "is not the occasional surgeon, but the *constant* surgeon"—the one who maintains his art at its highest level by daily and diversified practice in the operating-room. But it is given to a chosen few alone to devote themselves so exclusively to surgical practice. I fully realize that many of us—far removed from the advantage of a large hospital service—must be at once the internist and the externist. The small town needs the well-trained, all-around man—none can appreciate this better than I myself, and I would be the last to underrate the ability of the country doctor.

I realize that the question of location is a serious one, but remember that it is the *man*—and not the place—that counts. Who put Rochester, Minnesota, "on the map?" to use a current expression. Do not the crippled and the sick from all sections of the country make their pilgrimage there. The advantage of settling in a large city is very often offset by the terrific struggle of "arriving," and more especially trying to the young man with a girl in port awaiting "the day." While I doubt that the life of the country doctor is less strenuous than that of the city man, yet at any rate it has its compensation in the closer and more personal relationship that is established between the country doctor and his patients (have not his praises been sung by poet and novelist alike?). I should, however, advise the man who is settled in the small town to relinquish his practice for a few weeks or months, if possible, each year, or every two or three years, in order to visit the clinics of those whose ability has earned for them the stamp of public approval, and also the laboratories of

those who are devoting themselves exclusively to research work. By careful observation in these medical centers the physician in the small town renews his scientific enthusiasm and increases his value to those unto whom he is called to minister.

I have mentioned some things which the surgeon must know and some of the other subjects which are very desirable acquisitions; only a few of them; many more crowd upon my mind. When we consider the wide ramifications of our profession and its intimate connection with many other branches of knowledge, we are convinced that the claims it makes upon us have no limitation except the boundaries set by the brevity of life and our capacity for mental and physical endurance.

John Wesley in a burst of enthusiasm exclaimed, "My parish is the world." Our work also is cosmopolitan. Surgery has specialized functions, but is infused with the spirit which characterizes the healing art in every clime and every country. It employs the best activities of the intellect and adds the co-operation of disciplined nerves and trained muscles co-ordinating all for the most noble and beneficent purposes. It justly claims the devotion of many of the best of mankind. Nay, more! If the dream should come true and a higher type of humanity emerge in the dawning era, our calling will not become obsolete, but will flourish with augmented honor in the transcendent future. It was no wish to flatter, but sincere appreciation, which inspired the poet's lines:

Hail to the better, nobler age,
Foretold by prophet and by bard!
The super-man comes on the stage,
Behold him clad in surgeon's garb.

TYPHOID FEVER IN CLEVELAND IN 1916*

By M. E. FULK AND R. G. PERKINS

CLEVELAND

From the Laboratory of Hygiene, Western Reserve School of Medicine,

This report is the sixth of a series dealing with typhoid fever in Cleveland. As was noted in connection with the 1915 report, the weather conditions have been in no way unusual, so that sudden

*The work done by M. E. Fulk was undertaken as a thesis for the Third Year Course in Hygiene.

or excessive pollutions of the water for a limited period have not been marked. On the other hand, as will be seen from the tables, the pollution is showing a steady annual increase. There is to be noted, however, a reduction of total cases from 250 to 245, which, of course, is an absolute figure, and thus on account of the large growth of the city shows more of a decrease than the slight actual difference would indicate.

Sources of Information

These are practically the same as during the last years. We are notably obliged to the Department of Health for their epidemiological records and for their reports on water pollution; to the hospitals for permission to investigate their clinical records; to the Water Department for comparative records and for details of the use of hypochlorite; and to the Weather Bureau for the assistance in relation to the presence or absence of ice, the character of the winds and the daily rainfall during the year.

The Health Division records show marked improvement in accuracy, so that 40 per cent of the cases reported give the date of incidence, and the majority of the remaining case histories give information which, with the assistance of the physician reporting, determines this important date.

Division of the Year

As in previous reports, the year has been arbitrarily divided into two parts, one including those months in which it is *possible* for cases to have been due to fly infection, namely, July to November, inclusive, and the other including those months in which such transmission is *negligible*, namely, January to June, inclusive, and December.

Analysis of Incidence and Mortality (Tables 1 and 2)

Distribution.—The distribution this year differs somewhat from that of 1915 in that there is a greater tendency to grouping of cases in the center of the city. This refers only to the cases attributed to local conditions, and comparison with a population map showing density per acre indicates the distribution to be roughly proportional. There are city areas, however, in which living conditions are not of the best and in which communicable diseases and infant mortality show a high incidence, in which there is no typhoid.

There were no well marked localized epidemics during this year. The distribution of out of town cases was practically iden-

tical with that of the local cases, or, in other words, more or less according to population density.

TABLE 1
COMPARATIVE ANALYSIS OF ANNUAL INCIDENCE

Month	1910	1911	1912	1913	1914	1915	1916
January	24	32	24	13	20	7	10
February	16	23	7	20	29	9	16
March	38	49	20	20	13	25	11
April	102	37	22	49	7	10	15
May	25	27	23	39	10	21	17
June	18	40	17	20	16	19	11
July	22	24	31	33	34	15	20
August	95	80	41	59	36	52	38
September	123	167	58	83	43	39	51
October	104	62	62	39	25	27	27
November	48	38	27	32	20	20	17
December	41	18	19	28	17	6	12
	656	622*	351	435	270	250	245
Imported . . . . .	...	...	...	...	33	71	64
Cleveland cases					237	179	181
Per 100,000 crude	85.4	93.9	58.5	68.7	42.2	38.0	36.3
Corrected					37.0	27.2	26.9

*Including unreported cases.

TABLE 2
COMPARATIVE ANALYSIS OF ANNUAL MORTALITY

Month	1910	1911	1912	1913	1914	1915	1916
January	11	4	2	3	6	3	2
February	6	3	1	2	2	4	2
March	4	4	0	5	8	6	3
April	14	9	3	8	2	4	1
May	8	2	4	13	1	6	4
June	2	7	3	5	3	3	4
July	4	4	5	5	1	5	1
August	5	7	3	8	5	5	2
September	15	16	3	9	6	6	7
October	14	8	6	11	9	7	3
November	12	8	4	7	3	5	3
December	10	2	3	7	7	0	2
	105	74	37	83	53	54	36
Imported	0	7	2	5	6	9	4
	105	67	35	78	47	45	33
Per 100,000	16.0	12.7	6.16	13.4	8.1	8.21	5.34
Corrected		11.5	5.83	12.6	7.2	6.83	4.73

Typhoid deaths of all deaths for 191600359
After deduction of imported cases00320

With a very slight decrease in the number of cases for this year, the mortality rate is lower than for any other year with the exception of 1912, when there were 37 deaths in 351 cases, and the ratio to all deaths, on account of the large population increase, is even further diminished.

Etiology

Foods and Beverages.—During this year there were no epidemics which could be followed down to a milk supply or a food supply, or in which there appeared to be a common point of contact for a group of more or less simultaneous infections, but there was one interesting case duplicating the report of a similar one of last year. This was a resident in a city penal institution near Cleveland. He had been in the institution for three months, and it is probable, or at least possible, that the infection there occurred through food brought in by visitors. The water supply, while originally the same as that for the city of Cleveland, has passed through two reservoirs and high level pumping stations, reducing markedly the probability of a water infection. The absence of cases among the other 2,000 inmates, all served with the same milk and food, makes a local origin improbable, and the absence of other cases is against the presence of a carrier.

Flies.—In one or two districts of the city there was a marked increase during the fly season associated with fly-breeding places and a decrease with the onset of cold weather. It was not, however, possible to establish a definite relationship of the flies to the cases, though this must be considered as a possibility. Where the density of population is greatest, in the center of the city, there are few places in which it would be possible for flies to reach excreta, as the house-connections with the sewer are practically universal. It is, of course, true that a certain number of persons use the alleys and yards instead of the water closets, but the number is small and it is not probable that a high percentage have typhoid in the feces. During the last spring and summer there was a very active fly campaign and very marked reduction in the number of flies.

Contact.—Here again it is difficult to prove relationship of cases, and it has been the tendency to put down all cases without definite etiological relationship as probably due to contact. During this year there were ten cases which may be considered as possible

contact cases, though it must be remembered that other possible sources were not lacking. It is, of course, not proven that additional cases were not of this character.

Case 1. A brother who developed typhoid 10 days after the report of his sister's case.

Cases 2 and 3. Two sisters returning from a visit to a relative just recovered from typhoid. Their onset was on the same date, and typhoid was present in more or less epidemic form in the town visited.

Case 4. A girl whose sister had developed typhoid 16 days before this case developed.

Case 5. Similar to case 4, but with a three weeks' interval.

Case 6. A boy who developed typhoid 18 days after a visit to a sick cousin. It could not be established that there were typhoid conditions at the place visited.

Cases 7, 8, 9 and 10 were out of town cases, but suggestive of contact. Two months before coming to the city from a town in West Virginia where typhoid was prevalent, the mother suffered from headache, malaise, constipation and fever to a mild degree for about a month. The apparent close of the disease was about a month before the arrival in Cleveland. About three weeks later, the three children were taken to the City Hospital with their father, and a diagnosis of typhoid was made in all the cases. It was, of course, possible that the disease was contracted independently, but the illness of the mother and the later simultaneous infection of the rest of the family are strongly suggestive. It was not possible to establish the presence of typhoid organisms in the feces of the mother.

This makes a total of six cases infected in Cleveland and four probably infected outside of Cleveland in which there is some evidence of contact infection.

Water Supplies (Tables 3 and 4)

A. *Miscellaneous*.—The local supplies in the city, including the park springs and bottled water, are under sanitary supervision, and it is only in the outskirts of the city, in the rapidly growing portions, that some of the old farm wells are still in use. In these districts where isolated cases occurred prior to analysis of the well water and where subsequent examination showed the well to be

more or less polluted with fecal organisms, such an etiology is possible, though proof is not obtainable, and the case histories and maps do not show recent typhoid in the area of drainage.

B. *City Supply*.—Samples were taken directly from the tap at the City Laboratory, at 421 Superior avenue, until August, and after that at the new City Hall, on Lakeside avenue. In addition samples were taken daily except Sundays and holidays from three openings at the East 49th street pumping station. Sample 1 represents raw or untreated water, taken from the main shaft before the entrance of the hypochlorite solution. Sample 2 represents water treated about two minutes, and taken at the outlet of the pumps. Sample 3 represents water treated about thirty minutes, taken either at the tap in the yard or the tap of the wash-room, according to the weather. Inasmuch as the laboratory water represents water treated more than one hour, a wide range of contact time could be compared.

TABLE 3
RAW WATER SAMPLES

Figures refer to number of days on which lactose fermenters were found in the samples.

	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
January	12	12	16	1	5	16	*	18	19	11	19
February	11	11	12	6	10	13	9*	14	23	7	24
March	17	15	13	10	16	17	19	14	24	12	27
April	17	17	3	1	7	11	16	22	21	9	25
May	12	16	7	9	12	11	11	23	22	11	26
June	20	16	10	4	17	15	18	22	20	23	20
July	17	17	11	9	14	12	17	19	16	20	18
August	22	13	16	10	18	8	16	6	16	23	15
September	21	16	7	14	14	2*	14	11	24	18	15
October	21	16	13	12	21	*	16	13	21	23	23
November	14	15	7	9	14	*	12	19	19	20	13
December	7	5	2	12	9	*	4	25	19	22	13
Total	191	169	117	97	157	104	152	206	244	199	238
Monthly average . . .	16	14	10	8	13	12	14	17	20	16	19

*Chlorine started September, 1911, and no raw samples were taken until February 8, 1912.

Table 3 shows that during the first part of the year the lake water was contaminated almost constantly, and that for two-thirds of the year three-fourths of the samples showed intestinal pollution in varying degrees. The only months in which the percentage of positive findings fell below this were in the late summer, when the lake was hot and comparatively quiet, and in the last two months of the year.

Several factors must be considered here which have been referred to in previous articles. It has been shown that the pollution of the water at any given point four miles from shore is not constant at all times of the day, and this is shown each year by the fact that occasional raw samples show no gas formation, while those from the tap or other sources representing another block of water,

TABLE 4
COMPARISON OF FERMENTATIONS OF RAW AND TREATED WATER

Month	Lab'y Tap		· Pump		Washstand or Yard		Raw	
	Total days tested	Per cent Pos.	Total days tested	Per cent Pos.	Total days tested	Per cent Pos.	Total days tested	Per cent Pos.
January	31	64.5	25	68.0	25	72.0	25	76.0
February	29	93.1	24	83.3	24	100.0	24	100.0
March	31	96.7	27	96.2	27	92.5	27	100.0
April	30	90.0	25	100.0	25	100.0	25	100.0
May	31	93.5	26	100.0	26	100.0	26	100.0
June	30	83.3	26	76.9	26	76.9	26	76.9
July	31	48.3	25	48.0	25	80.0	25	72.0
August	31	45.1	27	22.2	27	55.5	27	55.5
September	30	26.6	25	24.0	25	36.0	25	60.0
October	31	58.0	25	56.0	25	68.0	25	92.0
November	31	12.9	25	8.0	25	36.0	25	52.0
December	31	32.2	26	30.7	26	34.9	26	50.0
Total	367	62.03	306	59.44	306	70.98	306	77.86

Raw water—Percentage of days on which gas formation in lactose was found77.86

Treated water—Percentage of days on which gas was found in one or more samples64.15

Reduction of pollution due to disinfection or other agencies13.71

do show gas formation. For this reason the fact that each day three treated samples and only one raw sample are taken gives probably a somewhat unfair comparison, since if three raw samples were taken daily, this would probably raise the percentage for that series.

The positive findings are recorded on a basis of fermentation of lactose broth with gas formation within 48 hours. In only a part of these have final confirmation been made, as previous series, over a period of years, have shown that over 90 per cent admit isolation of an aerobic fermenter. The total pollutions of the raw water show a marked increase over the previous year, amounting to

TABLE 5
CHRONOLOGICAL RELATION OF LACTOSE FERMENTATION AND HYPOCHLORITE DOSAGE

The first column, indicated by "Times," shows the number of days during the month in which lactose fermentation was found in one or more of the treated samples. The second column, labeled "Parts per million," shows the average dosage of hypochlorite during that month.

Month	1911		1912		1913		1914		1915		1916	
	Times	Parts per million	Times	Parts per million	Times	Parts per million	Times	Parts per million	Times	Parts per million	Times	Parts per million
January . . . . .	..	.....	12	0.732	14	0.337	16	0.681	10	0.395	23	0.329
February . . . . .	..	.....	6	0.719	15	0.371	15	0.608	7	0.318	27	0.041
March . . . . .	..	.....	15	0.541	11	0.387	16	0.492	14	0.278	30	0.073
April . . . . .	..	.....	19	0.566	27	0.579	22	0.493	9	0.271	27	0.087
May . . . . .	..	.....	20	0.493	25	0.585	24	0.480	8	0.274	31	0.067
June .. . . .	..	.....	12	0.407	23	0.579	14	0.462	13	0.264	28	0.061
July . . . . .	..	.....	9	0.319	23	0.593	9	0.442	23	0.285	24	0.043
August . . . . .	..	.....	8	0.450	16	0.453	11	0.473	22	0.315	20	0.218
September	6*	.....	8	0.409	17	0.429	19	0.486	13	0.443	17	0.271
October	16	0.944	7	0.403	14	0.460	16	0.487	28	0.440	23	0.282
November	11	0.872	9	0.408	21	0.554	19	0.430	25	0.429	10	0.310
December	9	0.586	6	0.389	24	0.637	15	0.389	26	0.452	12	0.414
Total	40	2.402	128	5.836	230	5.964	196	5.923	198	4.164	272	2.196
Monthly average ...	..	.801	11	.486	19	.497	16	.493	16	.347	22	.183

*Began September 11.
Feb. 1-22, inclusive, 0.750.
Feb. 23-29, inclusive, 0.338.

about 12 per cent on the average. The treated water shows an even more marked increase, amounting to 22 per cent in the laboratory tap, 25 per cent in the pump, and 43 per cent in the yard samples. In association with this, the average hypochlorite dosage during the year was .183 parts per million of available chlorine, whereas during the previous year it was .347, a decrease of 27 per cent. This would suggest that the increase in pollutions in the treated water and the decrease in hypochlorite dosage bore some definite relation to each other. This is especially probable on account of the extreme lowness of dosage at many times. The reduction of hypochlorite was due largely to the fact that complaints of disagreeable tastes in the water influenced reduction of the dosage without consultation with the Health Department.

Imported Cases (Table 6)

Cases whose apparent date of incidence was within three weeks of arrival have been classified as *out of town*, though it is possible of course that some of these had a short period of incubation and were infected in Cleveland.

Cases giving a history of residence in Cleveland for a period longer than three weeks before date of incidence, but whose residence was not continuous, were classified as *possibly* or *probably out of town* cases in proportion to the relative periods of absence and residence, and also to the typhoid conditions of the towns which they visited. Practically all the cases in this group gave similar histories, making possible a division including, on the one hand, those which we believe to have been infected outside of Cleveland and, on the other, those in which it is at least possible that Cleveland was responsible for the infection.

It is interesting to note that the total of out of town cases is practically the same as in the previous year. Out of 72 questionable cases, 64 were certainly out of town and 8 possibly out of town. Of these 72 cases, 41 occurred between July and November, inclusive, and in many of these cases diagnosis was made within 3 or 4 days after arrival. All gave a history of drinking tap water without regard to quality. If all these cases in the last two years are correctly classified, it suggests that a more or less constant proportion of the Cleveland reported cases has for years been due to such influences, and that ever since the change in the water supply in 1904 the percentage attributable to Cleveland has been exaggerated. It is only in the last few years that information of this

character has been attainable, and it serves to emphasize the time-worn fact that sanitation is not a local but a general function, and must be so considered if it is to be effective.

TABLE 6
IMPORTED CASES AND DEATHS

Month	In Town	Out of Town	Possibly out of Town	DEATHS	
				In Town cases	Out of Town cases
January	9	1		1	1
February	12	4		2	
March	7	2	2	3	
April	11	2	2	1	
May	12	5		4	
June	5	6		3	1
July	14	6		1	
August	28	7	3	2	
September	33	18		7	2
October	20	6	1	3	
November	15	2		3	
December	7	5		2	
	174	64	8	32	4

Summary and Conclusions

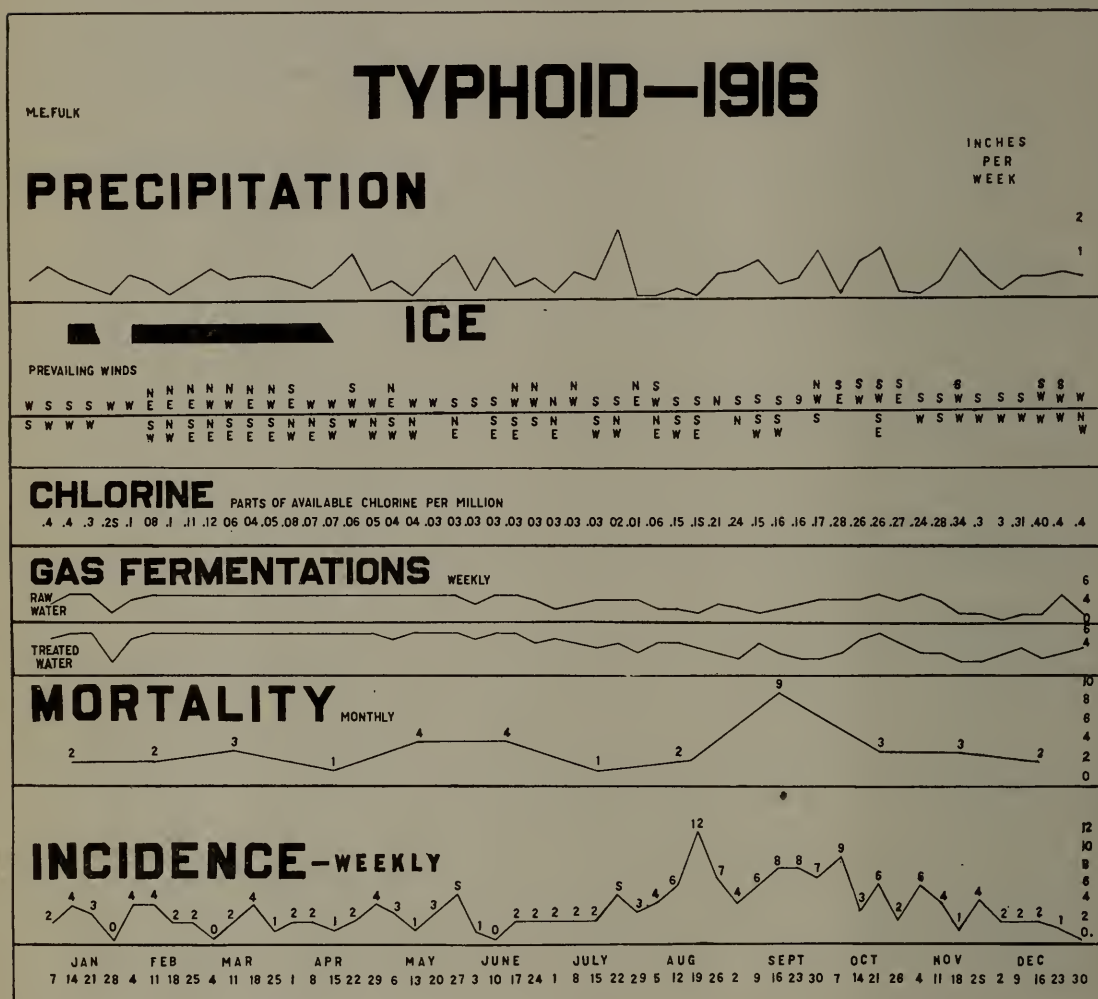
The total number of cases is practically identical with that of 1915, showing a reduction of the total typhoid in proportion to the total population. The death rate is, however, much lower, being reduced from 8.2 per 100,000 in 1915 to 5.34 in 1916. This is the lowest rate since 1912.

As usual, the summer typhoid exceeds the winter, and again as usual the number of vacation and imported cases is the greatest in the warm months. The average incidence of cases originating in the city has been between two and three a week for all the year, except the months of August, September and October, when the average rose above six.

More than one-fourth of the total cases originated outside of Cleveland, and were responsible for one-ninth of the deaths.

The general improvements in sanitary conditions, the increase of anti-typhoid inoculations, and the persistence of typhoid in the winter months, together with the high frequency of intestinal pollutions in the city water, continue our belief that the long-awaited

filtration plant will make a horizontal cut in the typhoid incidence, and will make it much simpler to determine etiological factors in the resident cases.



This chart shows the summary of the typhoid for 1916, together with the rainfall, the weather reports, the laboratory findings and the incidence and mortality. The dates as shown in the lower border carry through vertically so that the incidence for any given week may be studied in relation to the weather and laboratory conditions in previous weeks, and the bearing of these conditions on the curve may be seen. The RAINFALL is in total inches per week, with the figures noted at the top. The heavy line shows the presence of an ICE sheet over the lake, the broken portion indicating the period of floating ice. The prevailing WINDS for the week are shown below the ice record. This is followed by PARTS OF AVAILABLE CHLORINE PER MILLION. The portion marked GAS shows the fermentations as recorded in the City Laboratory. Here the upper line shows the number of fermentations of lactose each week in the raw water, while the lower line shows the average of the three daily examinations of water from the three points in the service, the pump, where the water has been treated for about five minutes, the yard, where it has been treated about thirty minutes, and the laboratory tap, where it has been treated about an hour and a quarter to an hour and a half, according to the estimate of the water department. The curve of the MONTHLY MORTALITY has the total number of deaths for that month noted at the proper points, and the WEEKLY INCIDENCE below is marked in a similar manner.

Both the incidence and the mortality are recorded on the basis of the *corrected* figures.

SYPHILIS OF THE NERVOUS SYSTEM WITHOUT CHARACTERISTIC SYMPTOMS OR SIGNS

By T. S. KEYSER, A. B., M. D.

CLEVELAND

During the last year a number of patients have been seen who presented no evidence of syphilis of the nervous system clinically, but in whom the diagnosis was established by examination of the cerebrospinal fluid. A brief summary of a few such cases would seem to be of some interest.

Case 1. A single man, aged 28, a bus-boy by occupation, complained of a "tingling" sensation of the left side of the body, usually occurring when carrying a heavy tray of dishes on the left hand. The family and past history were quite negative. Physical examination showed nothing abnormal except greatly enlarged tonsils. The neurological examination revealed no evidence of involvement of the nervous system. The cerebrospinal fluid, however, contained 250 cells mostly lymphocytes and gave a marked globulin reaction and a positive Wassermann reaction. The serum Wassermann was doubtful. Under vigorous antiluetic treatment the tingling sensation rapidly disappeared.

Case 2. The second patient is a young man 28 years of age, who went to Mexico in July, 1916, as a truck driver. In September, 1916, he complained of being unable to get enough sleep. He began to drink quite heavily and to smoke to excess in order to brace himself up. However, the drowsiness persisted, resulting in his release from service in January, 1917. In the meantime he became infatuated with a young woman and wanted to marry her, refraining from informing her that he was already married.

After the patient arrived home, his wife and relatives noticed a marked change in his personality. He was quite irritable, with periodic outbursts of temper in which he at times became violent and uncontrollable. He was often brutal toward his wife, insisting on the practice of various perverted acts. On one occasion he became very angry at his wife, thinking she had gone to a neighbor's house for immoral purposes.

The physical examination showed nothing which would indicate the etiological factor of the psychosis. The pupils were equal,

regular, centrally placed and reacted normally to light and in accommodation. There was no tremor of the tongue, face or hands. Articulation was entirely distinct, with no hesitancy in repeating test phrases correctly on first trial. The deep and superficial reflexes were all present and normally active. At the time of the preliminary examination the patient's general behavior and cooperation gave no evidence of any mental disturbance other than a rather defective realization that his conduct had been unusual during the last few months. His memory was remarkably good for both recent and remote events. He could do mental calculation rapidly and accurately. There was no lack of concentration or attention in various intellectual tests. No evidence of delusions or hallucinations was elicited. The past history of the patient also threw no light on the diagnosis. He had had gonorrhoea ten years ago, but emphatically denied chancre and gave no history of secondary lesions. He had been married three years and has one child living and well. His wife had no miscarriages.

From the standpoint of clinical diagnosis, this case seems worthy of brief discussion. In the first place, the history, etc., do not suggest the possibility of a primary psychosis, *e. g.*, dementia praecox, paranoia, or manic-depressive insanity, but rather some organic disease of the brain due to an exogenous factor. Of the latter there are but two which are at all probable, namely, alcohol and the spirochaeta pallida. The patient used intoxicating liquors very moderately until he went to Texas. While there he drank to excess. The account of his symptoms while in Texas could readily have been due to ethylism. However, after returning home he was not permitted to drink at all, but the progress of the mental disturbance continued. As he had not developed any of the permanent mental symptoms of alcoholism, he should have improved rapidly when he stopped drinking.

By exclusion, the most likely diagnosis would be syphilis of the brain. The negative history of infection is a matter of no importance, for in a large series of cases of neurological syphilis nearly fifty per cent denied primary infection and gave no history of secondary lesions. The absence also of clinical signs or characteristic mental symptoms does not exclude the possibility of syphilis.

The patient was admitted to the hospital where the following laboratory results were obtained: The cerebrospinal fluid showed

thirty cells all mononuclears, a marked globulin reaction and a strongly positive Wassermann. The serum Wassermann was also positive. Vigorous treatment was given over a period of six weeks, but the mental condition grew progressively worse, so that it was necessary to commit him to the State Institution. It is interesting to note that even after the patient became quite violent, often confused and delusional, none of the characteristic physical or mental signs were present. The progression of the symptoms during treatment establishes the diagnosis of general paresis of the fulminating type.

Case 3. This case is especially interesting in regard to the Wassermann reaction, which was negative in both blood and spinal fluid. The patient is a man, 37 years of age, complaining of epileptic attacks which began in May, 1913. The family history is entirely negative both for mental and physical disease. The only illness he had was typhoid at the age of 11 years. There were no convulsions during infancy. He married at the age of 27 and has two children, aged 7 years and 3 years, both of whom were found to be quite normal both physically and mentally. His wife is perfectly well, shows no evidence of physical disease, and has had no miscarriages. The patient denies venereal disease. The first convulsion occurred during sleep at a time when the patient was apparently perfectly well. From then until August, 1916, he had typical attacks in which he frequently fell and hurt himself, bit his tongue, soiled himself, and was very drowsy for 12 to 24 hours afterwards. These attacks occurred about six months apart. In August, 1916, he had an attack of status epilepticus lasting thirty-six hours, in which there were a great many convulsions of about one minute duration. Following this he was very drowsy for two days. Similar convulsions occurred at intervals of about four weeks during the next three months.

The patient was first seen December 16, 1916. Examination at that time proved to be entirely negative. He was sent to the hospital where a very complete clinical examination also revealed no abnormality. The cerebrospinal fluid, however, showed forty-eight cells mostly lymphocytes and a moderate globulin reaction. The Wassermann, as stated above, was negative in both blood and spinal fluid.

During January and February five intravenous injections of neosalvarsan were given at weekly intervals, followed by mer-

curial inunctions and moderate doses of potassium iodide over a period of six weeks. A few hours after the second injection he had a severe series of convulsions and did not regain consciousness during a period of sixty hours. During the succeeding two days he was very drowsy, sleeping the greater part of the time. Five weeks later, February 28th, a single convulsion from which he recovered in about ten minutes, occurred. This was the lightest attack he had had for over a year. Since then there have been no convulsions and the patient has felt unusually well. Recently the cerebrospinal fluid showed two cells, a trace of globulin, and a negative Wassermann. The latter was also negative in the blood.

There are two features in this case which are of importance in relation to epilepsy in syphilitics. In the first place, a large percentage of cases of epilepsy in which the attacks begin after adult life has been reached are of luetic origin; in the second place, patients with epilepsy rarely survive several attacks of status epilepsy except it be due to cerebral syphilis. Although the result of treatment so far has been very gratifying, the prognosis is not good, for luetic epilepsy rarely is cured by syphilitic treatment.

Case 4. A report of this case is given as a contrast to the above, *e. g.*, it is one in which there were no symptoms, the diagnosis being made by the condition of the pupils. The patient is an unmarried man, 35 years of age, who complained of infrequent attacks of headaches. His mother had been similarly afflicted. He had been subject to these attacks since boyhood. The facts given by him showed the condition to be one of migraine, a disease which is often hereditary and but rarely associated with syphilis. The patient had gonorrhoea at twenty, but no chancre or secondary lesions. In the examination the only positive finding related to the pupils. The left pupil was nearly twice as large as the right, was somewhat irregular, and did not react at all to light but promptly in accommodation. The right pupil was slightly irregular but reacted normally. On further questioning it was learned that the patient had noted the inequality of the pupils in the winter of 1913. He consulted an oculist, who diagnosed it as rheumatic and prescribed no treatment.

Examination of the cerebrospinal fluid showed thirty cells, marked globulin reaction and a strongly positive Wassermann. The serum Wassermann was also positive. He was given five intra-

venous injections of salvarsan, followed by mercurial inunctions and potassium iodide, by mouth for six weeks. Two weeks after the treatment was concluded, the cerebrospinal fluid showed no cells, a faintly positive globulin, and a negative Wassermann. The serum Wassermann was still strongly positive. That the headache was not due to the syphilis is further indicated by the fact that it was not affected by the treatment.

This case is especially interesting in regard to the duration of the involvement of the nervous system without causing any symptoms. The definite history of the pupillary changes showed that the central nervous system had been subjected to spirochaete invasion at least four years ago. During these years the patient took charge of a manufacturing concern which was almost defunct and had not only assumed and paid off all obligations, but has placed it on a profitable basis. Thus it is evident that the infection has not definitely involved the tissues of the brain. The neurological examination showed nothing abnormal in regard to the reflexes, etc. The rather remarkable results obtained in the spinal fluid indicate that the disease had probably attacked only the meninges or blood vessels, as they are especially amenable to antiluetic treatment.

Cases of luetic enarthrititis are often entirely latent and unsuspected until a sudden hemiplegia or other manifestation of cerebral involvement occurs. A young man, who had a chancre two years previously, suddenly lost the power of speech and writing. A child of five years developed a hemoplegia after a few days of indisposition. It was found that the father was not syphilitic but the mother had definite signs of syphilis of the central nervous system.

From the cases described a number of conclusions, such as have been frequently recorded in the literature, may be deduced.

1. The absence of characteristic symptoms or signs does not exclude syphilis. As one authority has said: "When in doubt suspect syphilis and when not in doubt still suspect syphilis."

2. The absence of a history of venereal infection does not exclude syphilis. It seems quite evident that a gonorrheal infection often masks an associated luetic infection.

3. Apparently healthy offspring and no history of miscarriages are not uncommon when the husband alone has syphilis.

4. A negative Wassermann either in the blood or spinal fluid or both is not a positive indication of freedom from infection. In

fact. it is a very serious mistake to put any reliance at all on a negative test, especially in the serum.

5. All patients in whom syphilis of the central nervous system is suspected should be subjected to a lumbar puncture. The cell count and the globulin reaction are the criteria upon which the question of infection can be most positively placed.

HEMORRHAGIC CONDITIONS OF MOTHER AND CHILD

BY WILLIAM D. FULLERTON, M. D.

CLEVELAND

Under this heading I will limit the discussion to conditions attributable to changes in the blood and its clotting powers.

There still exists much uncertainty as to the mechanism of coagulation. Howell¹ teaches that prothrombin is acted upon by thrombokinase, derived from the platelets, and converted into thrombin which reacts with fibrinogen to form fibrin. A substance anti-thrombin prevents the activation of prothrombin and the formation of thrombin, and thereby increases the coagulation time dependent upon the amount of antithrombin present. The blood platelets are greatly increased in numbers at the time of labor. From them, therefore, is obtainable an excess of thrombokinase which hastens the coagulation time². Here again is a protective mechanism against undue hemorrhage during labor.

Fibrin and fibrinogen are both increased after the sixth month and at term they may be one-third greater than normal. This fact may partially account for the frequency of thromboses and emboli during the puerperium.

True hemophilia is seen only in males and is inherited only through the female. However, females may exhibit a so-called hemophilic diathesis. When, as is rarely the case, such a condition complicates pregnancy the results may be grave³.

In both purpura hemorrhagica and hemophilia the platelets are abnormal. In the former they are greatly diminished, and when below 60,000 per cmm. purpura is almost certain to occur. When complicating pregnancy such a condition usually occurs when infec-

tion is present. In hemophilia there seems to be an inherited defect in the platelets which may be normal or even increased in numbers, but they are slow to yield their coagulative properties. Coagulation is slow to start and long in completion, but finally a firm clot will be formed². The coagulation time of the plasma in hemophilia may at times become normal without the occurrence of bleeding or other demonstrable change in the patient.

Puncture Test: In hemophilia an hemorrhagic area rarely results from a skin puncture; in purpura it is the rule.

Capillary Resistance Test: Application of a tourniquet to the upper arm in purpura results in petechial hemorrhages on the forearm; in hemophilia the result is negative⁴.

Hemorrhagic diathesis in the newborn has recently received considerable attention. Such a condition is more common than generally realized, but is frequently overlooked as the bleeding is either slight or obscured. Bleeding is most common from the mucous membranes, especially the gastro-intestinal, although no part of the body is exempt. Intracranial hemorrhage occurs after instrumental or spontaneous labors as the result of pressure, due to defects of the vessels or to abnormalities of the blood itself. During labor, after rupture of the membranes the point of least peripheral resistance is over the presenting part. Here the local increase in venous pressure may be sufficient to rupture the delicate cerebral or superficial veins and cause ecchymosis. Paul found 20 per cent of spontaneously born children had retinal hemorrhages and the percentage increased to 50 when they were born through a contracted pelvis.

In hemorrhagic disease of the newborn cerebral hemorrhage may occur alone, or, as is more often the case, associated with bleeding elsewhere. Treatment of such bleeding demands careful observation, differentiation and discrimination. Many cases are transient and will recover spontaneously. If the bleeding is severe or progressive immediate action should be taken.

The normal coagulation time for young children, 75-100 seconds, is considerably shorter than normal for adults⁵. Determination of such time should be done on all cases as it would be fallacy to decompress for cranial hemorrhage when the blood was unable to clot properly. The coagulation time being normal, intracranial hemorrhage producing progressive symptoms had best be combatted

by early decompression. For detailed symptoms and localization I can not do better than refer you to the very excellent work of Sloan⁶.

When the bleeding is due to abnormality of the clotting power the treatment par excellence is transfusion. It apparently makes little difference in the excellent results whether serum, plasma or whole blood is used, and the method of introduction into the child's body can be left to the experience and custom of the operator.

No agglutination or hemolysis has been noted between fetal and maternal blood so that mothers may always be used as donors, her physical condition permitting⁷. Such practice is contraindicated only after severe maternal hemorrhage or in the presence of infection. If the mother is not available the father should be used, the next preference being the nearest blood relative. Excepting with the mother or father agglutination and hemolysis tests should be done before transfusion and every precaution should be used to avoid a syphilitic donor though there is not usually time for a Wassermann.

The simplest method perhaps is the drawing with aseptic precaution, of 300-500 c.c. of blood from the donor, placing it in an icebox and allowing the serum to separate. As soon as available, inject 15-20 c.c. of the serum under the child's skin, using several areas for this amount and repeat every 8-12 hours as long as bleeding continues. If direct or indirect transfusion be done, the results will be more rapid. Care should be used not to introduce more than 60-75 c.c. into the child's vascular system for fear of overdilatation with serious consequences.

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EXTENSIVE PERINEAL HERNIA AND PROCEDURE FOR REPAIR. CASE REPORT

By N. M. JONES, M. D.

CLEVELAND

Complete prolapse of the uterus is a condition not infrequently met with in multiparous women and numerous operations have been devised for its relief. Among these may be mentioned the Watkins-Wertheim technique, in which the uterus is interposed between the bladder and the anterior vaginal wall in the position of anteversion through an anterior vaginal incision; the technique as practiced by Graves of Boston in which supravaginal hysterectomy is performed and the stump is anchored to the anterior parietes together with the stump of the broad ligament; the marsupialization of the uterus as practiced by Crile and others, in which the uterus is split longitudinally and anchored in the anterior abdominal wall. To all of these methods of operation must be added—for a successful outcome—a proper repair of the pelvic floor. All of them are successful in properly selected cases, and all have failures to their discredit. It is to the failures of an attempt to correct such a condition, to the failure of an ill-devised operation, that I owe the opportunity to report the following case:

Mrs. B., a married woman, 49 years of age, with six children, referred to me by Dr. Frank Oakley. Her family history is of no importance; her youngest child is 12 years and her first child was born by the aid of instruments and with extensive perineal laceration, for which an immediate repair was done. Three or four years after the birth of her last child there developed a complete uterine prolapse. In 1912 an attempt was made to correct this condition by a vaginal hysterectomy; infection occurred with metastasis in the right elbow, resulting in complete ankylosis. Very soon after the operation the vagina again everted and she was again in a much worse condition than before the operation. Apparently no repair work was performed on the perineum and no attempt was made to suspend the stump of the vagina. Certainly this was an ill-planned operative interference. When first seen by me there was complete eversion of the vagina—this structure protruded from the vulva for a distance of about five inches—its surface ulcerated and weeping—and the sack thus formed containing loops of intestines—a true peri-

neal hernia. There was incontinence and the parts were constantly bathed in urine, necessitating the wearing of a pad. The perineum was lacerated almost to the sphincter ani and the introitus admitted the closed fist with ease. It was found that on replacing the vagina the vaginal hand could readily be approximated to the abdominal hand in bimanual examination. I concluded, therefore, that by making a very extensive perineal repair—practically obliterating the introitus and forming a strong muscular perineal body—and by then suturing the vagina to the anterior abdominal wall, a cure might be accomplished. It was explained to the patient and her husband that this would probably render cohabitation impossible, and was the more readily accepted by them on account of the husband's impotence. The operation was performed at St. John's Hospital under ether anesthesia. A median longitudinal incision was made through the mucosa of the posterior vaginal wall to the mucocutaneous border and the lateral sulci opened up by blunt dissection until the edges of the levator ani muscle were exposed; these were brought together in the median line by several interrupted chromic sutures—for a distance of about $2\frac{1}{2}$ inches. A curved incision was next carried along the mucocutaneous border, considerably higher than the caruncles on either side, the redundant mucous membranes dissected away, the bulbocavernosus muscles united in the median line by interrupted chromic catgut sutures and the wound closed by a running suture. A new introitus was thus formed, barely admitting the tip of the index finger, a large, firm, muscular, wedge-shaped perineal body resulting, and the posterior commissure of the vagina lay snugly up under the symphysis. The abdomen was then opened in the median line with the patient in the Trendelenberg posture, the top of the vagina seized in volsella forceps and brought out through the incision, a manoeuver which could be easily accomplished. A rather large surface on the dome of the vagina was freshened, the peritoneum closed around just below the freshened surface and sutured to the vagina and this raw surface fixed to the rectus muscles by several chromic sutures. The abdomen was then closed in the usual manner. The operation lasted about one hour and the patient came off the table in good condition. Her convalescence was uninterrupted. She was kept in bed rather longer than usual to allow of firm union of the extensive perineal repair. When last examined, about seven weeks after the operation, the perineum was perfectly firm; by careful manipulation it was possible to introduce the well-lubricated index finger into the

vagina and ascertain that it was being held properly in position. I see no reason to anticipate a recurrence of the condition. There has been no incontinence of urine and no frequent micturition.

The main point in such an operation, to my mind, is to make such a repair of the pelvic floor as to carry the introitus up under the symphysis, thus taking it out of the axis of pressure. I do not believe that an anterior colporrhaphy is necessary, because the cystocele is corrected by the pulling up of the vagina in its suspension. It is possible that such an operation might well be done on an ordinary case of complete prolapse, first performing a complete hysterectomy and then a ventral fixation of the vagina as above described. In my opinion this technique would be superior to that of Graves', in which the cervical stump is left, in that theoretically, at least, the stump is open to the danger of carcinomatous degeneration. It might appear that the vagina would press upon the bladder and cause frequency and discomfort; this has not, however, been the experience in this case, and I believe that the rather tightly drawn vagina serves a useful purpose in that it corrects the concomitant cystocele and resultant retention and cystitis.

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EDITORIAL

ALUMNI OF WESTERN RESERVE MEDICAL COLLEGE

The annual meeting is soon to be here. We are making preparations to give you an enthusiastic and interesting meeting. Our Country is at war. The Medical Department of the United States needs nearly ten thousand medical officers. Western Reserve must do its duty now as it has in every call from our Country since the School was founded. Have you offered your services? Are you

prepared to do so soon? Let all of those who have joined the Army or Navy have a special meeting at that time, and let all those who have not yet but can join by that time, come prepared to sign up for the service he prefers and make this a gloriously patriotic, self-sacrificing meeting for the welfare of our Country and the honor of Western Reserve.

F. E. BUNTS.

WESTERN RESERVE MEDICAL ALUMNI MEETING

The annual alumni meetings of the Medical Departments of the various medical schools of Cleveland have assumed new interest in the past few years.

In this Alumni Association are included all the graduates of the Cleveland Medical College, Charity Hospital Medical College, Medical Department of Wooster University, Medical Department of Western Reserve University, Medical Department of Ohio Wesleyan University. This union alumni association combines the past and present medical interests of Cleveland so that one active association is the result with an annual meeting and clinics full of interest and value to the alumni.

This year's meeting takes place June 12th to 16th. The time will be devoted to daily scheduled clinics, medical, surgical and special, in all of the large hospitals in Cleveland, together with special lectures and demonstrations by the heads of the Departments of Physiology, Anatomy, Pathology and Pharmacology of the Western Reserve Medical School.

We shall be especially fortunate this year in having Dr. Alfred Stengel, Professor of Medicine in the University of Pennsylvania, to deliver the address at the annual dinner. Dr. Stengel will also give a medical clinic on the day preceding or following his address.

This year's gathering occurs at a time of a great National crisis. Our country is now at war with a foreign power, and we do not know what great demands may be made upon us in the next few months. Many of Cleveland's best young medical men have gone into the service of the United States and from the outlook certainly many more must go and all can add their labors to the success of the war. All alumni should know the duties of the medical military man. It was our plan to have this subject taken up in three talks by Major

H. L. Gilchrist of the Regular Army Medical Service. Major Gilchrist having gone to France with Cleveland Base Hospital Unit No. 4, we are endeavoring to have a substitute to deliver these talks. Congress has decided upon conscription, so every medical man should come to hear what is expected of him when he starts training in the Medical Corps.

Last year the attendance at the annual meeting far surpassed all expectations, over four hundred being registered, which is nearly twenty-five per cent of the total living alumni, therefore, we hope this year to welcome an increasing number for a pleasant and profitable time is certain.

F. C. HERRICK.

PATENT MEDICINES

A recent development in the activities of the Health Division of Cleveland should be of interest to all physicians in that it is an attempt to reduce the number of fake remedies which are so prominent in the drug market. There are three groups into which these so-called remedies can be divided. Those in the first group contain habit-forming drugs or poisons in some form that is definitely dangerous and the use of which is to be avoided. This group would include remedies containing morphine which are recommended for babies, hair remedies which contain lead acetate without mentioning the fact, and similar compounds. The second group comprises those which, while offering large claims of curative and remedial action, have in them so little of medicinal value that these claims are ridiculous. In the third group we have those in which there is a sufficient amount of medicinal substances to permit of argument as to its effects in some one at least of the diseases for which curative claims or implications are made. It is with the first two groups that the Health Division is concerned.

After the passage of the Food and Drugs Act, in 1906, it became obvious that claims to cure must be removed from labels, and at that time and for some time afterwards it was the practice of the courts to take the attitude that, *unless a cure was claimed*, no action could be taken. A progressive change has, however, been noted, and now the attitude of the courts and of the Federal Government is that wherever a compound is suggested as a remedy in

or for a disease, the implication of cure is carried by the recommendation for use. This is a very encouraging feature in the attitude of the law.

The Division of Health has placed an embargo on the sale of a group of remedies noted elsewhere in this issue as a result of comparison of analyses and claims. The Division has taken the position that it is its function to insist that drug compounds sold as remedies should have some truth in their claims, as it insists that the food supplies of the city should be what they claim to be. For success in this undertaking, co-operation is needed on the part of the physicians and of the druggists. It is a matter of constant report by druggists that physicians prescribe various patent medicines and thus show themselves as not in sympathy with the abolition of nostrums. This is a situation which makes it more difficult to act against misbranded remedies, but it is probable that those who prescribe them do so in ignorance of their composition. A monthly list of patent medicines with their approximate formulae as obtained by analysis in reputable laboratories will therefore be published in the *Journal* by the Division of Health.

The majority of patent medicines are more or less a burden on the pharmacists, inasmuch as the profit is small and they interfere with the sale of the druggist's own products. The Division of Health is therefore hopeful that the druggists in general will support the movement.

The first difficulty in the way of a successful educational campaign is, of course, the daily newspaper. The Cleveland newspapers are among the worst offenders in this line. In New York there are practically no patent medicine advertisements in the first-class dailies, whereas in all the local papers, and especially in the morning issues, a very large percentage of the advertising matter is paid for by the patent medicine interests. By contrast, a Cleveland weekly has been of great assistance to the Division in giving publicity to its work.

The editors of the *Journal* have permitted the use of space in each issue for detailed accounts of certain of these remedies, and the Division of Health trusts that physicians who read these notes will co-operate and will discourage the drug stores who make up their prescriptions, from carrying remedies of this type.

R. G. PERKINS.

ABSTRACTS

ABSTRACTS OF MEDICINE

An Anatomical Study of Fifteen Cases of Acute Poliomyelitis. W. B. Blanton, *J. Med. Research*, 1917: XXXVI: 1.

The material from which this study was made consisted of fifteen cases of acute poliomyelitis, thirteen of which occurred in the epidemic of last year in New York City. All the cases were children from seven months to ten years of age, the majority being under three years.

Brain and Cord.—No gross change was found on section of the brain, beyond congestion. The most typical lesion occurred in the ganglion cells of the spinal cord. Injury to these cells appeared to occur early, and was often so severe as to cause their total destruction. (Vascular changes in the cord in some cases were the chief feature of the microscopic picture. The vessels were seen to stand out as bright red channels crowded with red blood corpuscles.) In some cases ganglion cells showing an advanced grade of degeneration were found lying side by side with ganglion cells in which no pathological change could be made out. From this finding the writer believes that the ganglion injury is probably the result of direct injury by the causative organisms or their toxins, instead of being secondary to the interstitial changes of edema, congestion and cell accumulation as described by the older writers. There has been some discussion in the literature as to whether or not the spinal fluid is increased in acute poliomyelitis. In all of Blanton's cases the normal quantity was found, under no increase in pressure.

Other organs of the body presented pathological changes of various degrees, but nothing characteristic of poliomyelitis was found. A search for organisms in sections of the cord was made, but only doubtful results were obtained.

R. W. S.

Comparative Study of the Toxic Effects of the Natural and Synthetic Salicylic Acids. Paul Bartholow, M. D., and Archibald McNeil, M. D., *Am. J. M. Sc.*, 1917: CLIII: 738.

The writers, in experiments on human individuals and on animals, attempted to determine the toxic and fatal doses of the natural and synthetic acids and their salts. They conclude from their work that when pure samples are used the effects in animals are virtually the same. However, in men they find the difference is more distinct. In the case of the natural acid there is less gastric disturbance, the cerebral effects are slighter, and in general it is better borne than the commercial acid. It is not so toxic in very large doses, although when more than 75 grains are given in 24 hours they find a tendency to delirium, salivation and flushing of the integument. It appears that the natural acid has less cumulative effect.

R. W. S.

Trench Fever: Mainly Its Clinical Manifestations. Captain J. M. A. Costello, *Practitioner*, 1917: XCVIII, 456.

Definition.—An acute febrile disorder, characterized by sudden onset with pyrexia lasting three to seven days, recurring once or twice after a normal period.

Historical Note.—Cases have been observed in France and Belgium, but never in England, where the men are in training under about the same condition as are the men on the continent. Early in the war a low fever, called Flanders Fever, was described.

Etiology.—No definite organism has been found. From the nature of the disease, together with the occurrence of the disease in physicians and nurses caring for these cases, it may be inferred that a living virus is the causative factor. Anxiety, strain, overwork, wet and cold, sleeplessness and lice have been ascribed as predisposing factors. More cases have appeared in adolescent soldiers.

Symptoms.—The onset is sudden, with an initial pyrexia of 99° to 102°. The fever lasts from three to seven days and then drops to normal or below. It remains normal for three to eight days and a recurrence of the pyrexial period occurs. This, again, is generally followed by a normal period and succeeded by a third pyrexial state. Sometimes a fourth attack does occur. The third attack is not so usual, and the fourth less so. The common drop in the temperature is by lysis, but it may also occur by a crisis. Pains in the head and limbs, tenderness along the shins and feet, constipation, malaise, and sweating at night are complained of frequently. Attacks recur.

Prognosis.—Complete recovery is the rule.

Treatment.—No specific therapy is advised.

Bacteriology.—Blood cultures were repeatedly negative. Experiments showed that the whole blood and blood corpuscles alone were infective, while the serum was not.

H. S. F.

ABSTRACTS OF SURGERY

Infection of Simple Closed Fractures. J. P. Blake, *Boston M. & S. J.*, 1917: CLXXVI: 628.

Blake has seen in the past twenty years, at the Boston City Hospital, ten or twelve cases of infection of simple closed fractures. He gives as examples, fractures of the humerus, of both bones of the leg, and of the os calcis. The infection gains entrance through the skin, by way of either a scratch or a hair follicle, or by the gateway of blebs and blisters; rarely through the circulating blood, in a manner analogous to that in cases of acute osteomyelitis.

The importance of bearing this possibility in mind should lead to more than the usual care in cleansing the skin and in the treatment of blebs and blisters. When suppuration is evident, incision and drainage and the usual routine of the septic compound fracture treatment is obviously to be followed.

C. H. L.

The Surgery of Amputation Stumps. G. M. Huggins, *Lancet*, 1917: I: 646.

This article is based on an experience of 2,000 cases and contains many interesting points.

No stump is ready for the instrument worker until it has been radiographed, as it is quite a common thing for a stump to heal and yet contain a sequestrum, with the result that as soon as an artificial limb is worn an abscess and sinus result.

Sinuses in stumps are generally due to silk ligatures, necrosis of bone, foreign matter such as metal, or to long septic tracts in scar tissue which are unable to close from imperfect drainage and low vitality. Huggins always uses a crotchet-hook instead of a probe in examining sinuses, and is often able to remove small sequestra or ligatures.

Pain or tenderness in the stump is caused by nerves adherent to the scar, bulbous nerves, sequestrum within new bone, spurs of new bone,

and by chronic abscess. Adherent nerves should be removed. Bulbous nerves usually become painless in three to four months. Spurs of new bone are common and often require removal.

Flexion deformity of stumps requires massage, splinting, passive movements, and at times forcible correction under ether, perhaps with tenotomy. It can and should be prevented.

The best foot amputation is a Syme, with bone section a quarter of an inch above the articular surface of the tibia. This gives a stump short enough to fit an artificial ankle, and is endbearing.

Amputation in the middle third of the leg, at the lower end of the prominence of the calf, using a long anterior and short posterior flap, gives a serviceable stump.

The best amputation about the knee is through the top of the condyles. Every inch of femur above the condyles is of the utmost value until the upper third is reached. In this situation, unless two and one-half inches of bone below the lesser trochanter can be saved, a thigh bucket cannot be used. Therefore it is best to amputate through the neck of the femur.

C. H. L.

Treatment of Trench Feet by the Subcutaneous Injection of Oxygen.

H. Oswald Smith, *Brit. M. J.*, 1917: I: 511.

In gangrenous and edematous forms of trench feet Smith has employed subcutaneous injections of oxygen, released from the usual oxygen cylinder, and passed through a saturated solution of sodium carbonate. The needle is inserted between the heel and the malleolus on either side, and on the dorsum of the foot near the base of the toes. The oxygen is slowly injected into the subcutaneous tissue till the foot is filled out.

The edema of trench feet produces stasis in the veins. The venous blood, if oxygenated, will help to keep the tissues alive until the serum can be drained away. The drainage takes place through the puncture holes, the oxygen seeming to drive out the serum. Mere puncture, without the use of oxygen, has been found useless in relieving the edema. One injection is usually sufficient.

There is marked relief of pain at once, the color improves, the destruction of parts is greatly lessened, and in many cases the whole foot is saved.

Blisters should be drained by a silk thread passed through them by means of a straight surgical needle. The dead skin should be left intact as a protective.

C. H. L.

Sacro-iliac Strain. Wm. S. Baer, *Johns Hopkins Bull.*, 1917: XXVIII: 159.

Studies show that the sacro-iliac joint possesses all the true histological structures of a true joint with the articulating surfaces covered by cartilage and synovial membrane. It possesses a definite amount of motion, which varies and is always greater at parturition.

Baer divides sacro-iliac strain into two classes: (a) in which the sacrum in its superior border tilts backward, and (b) in which the sacrum in its superior border tilts forward. These two types give a different set of symptoms, are different in etiology, and must be treated differently.

Etiology for class A are:

1. Strains due to childbirth. These may be unilateral or bilateral.
2. Traumatic—direct.

3. Traumatic—indirect. This is by far the most frequent. It is due to muscular strain caused by the activity of the patient himself while performing some task greater than the muscles will stand, or by some sudden twist.
4. Static influence. One joint is placed under greater strain than the other.
5. Congenital malformation.

Etiology for class B are:

1. Static influence. Particularly in girls from 12 to 20 years of age who have outgrown their muscular strength.
2. Neurological diseases.
3. General visceroptosis.
4. Intrapelvic tumors or misplacements.
5. Adiposity.

Symptomatology.—Type A: Pain may be slight or severe. According to the portion of the fibre of the nerve which is pulled upon, whether it be the sciatic, lesser sciatic, or sacral nerve, the pain is referred along that branch. Every motion causes pain.

In type B pain is generally referred to the hollow of the back and at times radiating down both thighs and may be described as a "tired feeling."

Diagnosis.—In type A the history is important, as is also the character of the pain. Baer calls particular attention to "pain on pressure over the sacro-iliac point in front"—just to the side and just below the umbilicus. Pain will be elicited at that spot on the side in which the sacro-iliac joint is involved. The flat back or the obliteration of the lumbar lordosis is another sign. In bilateral cases there is no deviation of the spine, but in unilateral cases the spine deviates to the opposite side, which is just contrary to the deviation in sciaticas due to osteoarthritis or infection of the spine. Bending forward is more restricted than bending backward, and bending toward the affected side is more restricted than away from it. Kernig's sign is positive on the affected side. Radiographs may or may not help. In type B, which occurs mostly in young girls, one finds the lumbar lordosis increased, the musculature below par, and visceroptosis. Pain is a sense of "always being tired." Pain on direct pressure is slight or absent, is rarely present over the "point in front." There is rarely any deviation of the spine. Kernig's sign is absent. Hyperextension backward may be restricted.

Sacro-iliac strain must be differentiated from pelvic disease, tuberculosis of the joint, and sciatica. Lumbago is generally a strain of this joint.

Treatment.—Type B: Relieve the abdominal muscles, correct the visceroptosis by a properly fitting corset reinforced with two steels on either side of the midline in the back. Massage and exercise. If gynecological, of course, this must be corrected.

In Class A the treatment is supporting or manipulatory. In mild acute forms, strapping from one trochanter to the other. The more chronic forms require a stronger brace for several months—surcingle or corset. Baer has used the manipulatory treatment for severe or resistant forms in 100 cases, with immediate relief in almost every case and a relapse in only three. The procedure is as follows:

Patient is anesthetized on a low, flat, non-movable table and complete relaxation obtained. An assistant holds the pelvis firmly. The operator grasps the calf of the leg and flexes the fully extended limb. The hamstring muscles are found in a state of spasm. The stretching is carried on till the hamstrings are relaxed. The leg can then be flexed far beyond a right angle. This is synchronous with a definite click. The patient is placed on a Goldthwaite frame and put in a plaster dressing from the nipple line

to the knee on the affected side, in order to preserve the normal lumbar lordosis thus obtained. The patient remains in the cast in bed ten days. The cast is then replaced by a small pelvic strap to be worn for the next two months.

A. S.

Chronic Medullary Abscess of the Long Bones. W. Brickner, *Ann. Surg.*, 1917: LXV: 483.

Brickner notes that the literature has but few references to bone abscesses except "Brodie's abscess," a chronic circumscribed abscess of the bone substance. This is readily recognized in the roentgenogram.

The medullary abscess cannot be recognized as such by the X-ray. However, the diagnosis can be made by combining the X-ray findings with the clinical observations. The roentgenogram shows but little external thickening of the bone; that the osteitis encroaches and sometimes in one or more places completely obliterates the medullary cavity. Syphilis must be excluded. The chronic medullary abscess of a long bone is not associated with fever. The sole symptom is severe, more or less continuous pain. It may radiate in the affected limb and be mistaken for neuritis or rheumatism. The sole constant objective finding is localized bone tenderness. Prompt cessation of pain and tenderness follows the simple evacuation of the pus. Brickner cites three cases in which the bone was only trephined, pus allowed to flow out, and then the wound closed with small drain only to the site of the opening in the bone. The wounds healed promptly. The incision is over the point of maximum tenderness. He advises to introduce nothing into the cavity, use a gauze drain only to the bone and remove as soon as discharge has ceased. The article is illustrated with roentgenograms.

A. S.

ABSTRACT OF NEUROLOGY

The Interpretation of the Neuroses: Biologic, Pathologic, and Clinical Considerations, Together with the Evolution of the Psychogenic Factors. F. C. Dercum, *J. Am. M. Ass.*, 1917: LXVIII: 1223.

The author decries the hopeless confusion which the theories of the Freudian school has caused in regard to the neuroses. The psychoanalysts interpret all symptoms from a psychogenic standpoint, uniformly finding some sexual trauma or repressed complex in which the "libido" plays the essential role, as the etiological factor of the neurosis.

The symptoms produced by fatigue give rise to definite clinical phenomena, due to the nutritive changes in the various parts of the body. These changes are fairly well known in regard to the muscular system, but only slightly in regard to the nervous system. Nerve substance, like muscle, is neutral or feebly alkaline when at rest and acid when active. Increased oxidation with the formation of carbon dioxide results from the action of nerve substance. The products resulting from activity play an important and beneficial role in the economy. Under normal conditions they act as sedatives and induce sleep and rest. Excessive exercise causes an excessive consumption of tissue and an abnormal amount of waste is formed, which exerts a toxic action on the nervous system, producing an irritation and excitation which prevents rest and sleep. Fatigue is a real physical condition and is not explained by a state of mind, the result of sexual trauma.

The author divides the neurosis into four groups—neurasthenia, psychasthenia, hysteria and hypochondria. Neurasthenia is an exhaustion neurosis due to overstrain of a normal non-neuropathic nervous system. It is characterized by incapacity for sustained expenditure of energy, both mental and physical, irritability and exaggerated response to stimuli from without, active re-

flexes, lack of concentration, indecision, and a state of fear or anxiety. Psychasthenia is also the result of exhaustion, but occurs in individuals who were previously neuropathic. The symptoms of exhaustion, present in neurasthenia, occur together with others which are the result of the individual make-up. The patient has a feeling of powerlessness, inadequacy, and fearfulness, resulting often in profound inertia or abulia. The many forms of phobias, obsessions and anxieties occur especially in the psychasthenics. Hysteria is a form of neurosis occurring in individuals of a definite neuropathic personality. The striking feature of hysteria is an innate suggestibility. The multitudinous somatic symptoms are the result of suggestion, very often of physicians. Hysterical individuals are also excessively emotional and react inordinately to fright, joy, annoyance, anger, fear, fancied slights or wrongs, shame, etc. Hysteria is a neuropathy of degeneracy and is thought to always be inherited. The immediate causes of hysterical attacks have merely the value of *agents provocateurs*. Hypochondria is a neurosis due to a change in the general sense of bodily well-being, which gives rise to a more or less fixed conviction of illness. The patient complains of manifold and distressing symptoms referred to various organs of the body. It occurs without any evidence of fatigue or stigmata of hysteria. It is the expression of a diseased personality and of an abnormal condition inherent in the individual.

T. S. K.

Neurasthenia and Psychasthenia. Col. Howard H. Tooth, *J. Roy. Army Med. Corps*, 1917: XXVIII: 328.

In the army individuals are subjected to all sorts of shock and strain and, therefore, infinite functional phenomena occur, *e.g.*, constriction of visual fields, amaurosis, aphonia, deafness, various forms of paralysis, etc. One group consists of patients who, after some shock or strain, show essentially the symptoms of fatigue and abulia, the symptoms especially characteristic of true neurasthenia. The author believes that neurasthenia must be due to some biochemical change in the nervous system of which we as yet have no definite knowledge.

Besides the essential symptoms of neurasthenia, many other symptoms occur, which often lead to much confusion in diagnosis. Among the most frequent are vertical or posterior headache, which is increased by exertion and diminished by rest. Hyperacousis is quite common and may be so marked that pleasant sounds as music may be repugnant. Over-sensitiveness to light or diminution in the acuity of vision is often associated with a ready fatigue. The neurasthenic is morbidly conscious of visceral movements and become morbidly anxious concerning their physical condition. Pains in the neck, back or extremities may be very severe and defy all means of relief. Muscular tremors, especially of the facial muscles and eyelids, is very common. These tremors are fine, independent and vibratory and cannot be simulated. The knee jerks may be decreased or normal but more often increased. Testing the reflexes may give rise to more or less extensive disagreeable sensations or even a marked emotional state. An irregular exhaustive clonus is not uncommon. Very often there is no response to plantar stimulation.

In psychasthenia the symptoms of neurasthenia are usually present, but the picture is dominated by physical or mental symptoms. There is an attitude of depression with an underlying aspect of fear and apprehension of undefined evil. Suicide is often talked of, but rarely carried out. There is usually a loss of interest, a feeling of intense boredom, and irritability. There even may be an actual loss of memory for current events. Insomnia is a constant and early symptom.

The two main etiological factors in the neurosis, aside from the inherent personality, are physical stress or strain and shock. It is interesting to note that the neurosis rarely develops in soldiers who have been physically injured.

Usually a nervous breakdown runs a course of about a year's duration. In the treatment the first and most important point is to gain the confidence of the patient, for the assurance of the physician goes a great way toward re-establishing a healthy attitude of mind in the patient. This confidence is usually obtained if the doctor listens patiently and sympathetically to the long account of symptoms and makes a thorough physical examination. The routine described depends entirely on the individual characteristics. In some, rest in bed and isolation is best; in others, outdoor exercise, travel, etc.; and, in others, continuance of work on a low scale. T. S. K.

Is Epilepsy a Bacterial Infection? J. F. Munson, *N. York M. J.*, 1917: C. V.: 836.

Marie Bra first described an organism which she considered the etiological agent of epilepsy. Her claims were rejected by various workers and the subject did not come up again until re-opened by Reed, of Cincinnati, who has made positive statements in regard to the question, unsupported by definite scientific data.

During more than 20 years, over 4,250 epileptics have been cared for at the Craig Colony. In all this time not one fact has come to notice which would suggest that epilepsy is an infectious disease.

The author made blood cultures exactly according to the methods of Reed, but using every possible means to prevent contaminations. In each case blood was taken in two flasks. Of 131 cases tested all were entirely negative except one. In this single instance an organism corresponding in general to the Reed bacillus was obtained in one of the two flasks. A second culture was taken and was negative. Contamination occurred in 10 per cent of the flasks, showing the difficulty of preventing this in a large series of cases. From cultures taken from cecal material of 21 cases coming to autopsy or operation, four yielded a spore forming bacillus of the Reed type. Spore forming organisms in the intestinal tract are not unknown and the finding of such organisms in epileptics does not necessarily predicate a specific infection causing epilepsy.

The author has examined two strains of the bacillus epilepticus sent to him by Dr. Reed. They were found to bear an extremely close resemblance to the common hay bacillus. The organism is extremely resistant, growing after an exposure of fifty minutes at boiling heat, thus showing how easily contamination with this bacillus might occur under ordinary methods of sterilization.

From his work the author believes that the blood of epileptics does not contain a bacillus and that the spore bearing bacillus found in the intestines of epileptics occur also in the intestines of normal individuals and, therefore, cannot be considered as an etiological factor in epilepsy. T. S. K.

ABSTRACTS OF PEDIATRICS AND CONTAGIOUS DISEASES

Meningococcus Irido-chroiditis. Marcel Lavergne, *Arch. de méd. d. enf.*, 1917: XX: 189-193.

This complication of epidemic cerebro-spinal meningitis was first described by Jacobi in 1865. It is relatively rare; according to Morax occurring in from 3 to 6 per cent of cases.

The onset is usually gradual, but may be abrupt. The symptoms are pain or feeling of discomfort in the affected eye, with a sensation of mist or fog before the eye. The eye should be watched carefully for the appearance of hypopyon. When this develops evacuation of the pus and injection

of the anti-meningococcus serum directly into the anterior chamber is advised. The importance of repeated injections is emphasized. Intraspinal and subcutaneous injections of the specific serum are without effect on the eye condition.

The author reports three cases. While the results obtained were not brilliant, he feels that the treatment recommended is the best available.

J. E. McC.

Incidence of Bovine Infection of Tuberculosis in Children. C. Y. Wang, *Edinb. M. J.*, 1917: XVIII: 178.

Various workers in Edinburg investigated 281 cases of clinical tuberculosis. One hundred and two cases were younger than five years, and in this number the bovine tubercle bacillus was found in 80 cases or in 78.4 per cent. The same organism was found in 45 out of 64 patients between the ages of five and sixteen years, or in 70.3 per cent; in nine out of 115 patients above the age of sixteen years, or in 7.8 per cent. In children under one year abdominal tuberculosis and tuberculous meningitis were responsible for 90 per cent of the deaths from this disease, while between the ages of one and five years these forms of the disease claim 75 per cent of the children dying with tuberculosis. At autopsy they were able to isolate the bovine bacillus six times in nine cases examined bacteriologically. A large number of the children of Edinburg are fed on raw cow's milk. Many of the animals are infected with tuberculosis. Children fed on raw milk and those fed on boiled milk were tested in regard to their reaction to tuberculin. In the first group 37.5 per cent reacted to the test, while only 15.4 per cent of the tests were positive in the latter series.

H. C. K.

Epidemiology of Bacillary Dysentery. W. G. Smillie, *Am. J. Dis. Child.*, 1917: XIII: 337.

Smillie reports a series of seventy-five cases of bacillary dysentery observed in Boston during the summers of 1915 and 1916. The cases were grouped in an interesting manner. Sanitary conditions were bad in two districts in particular. In the south end and in South Boston live a large number of Irish-Americans, while the north end and west end are inhabited by foreigners, mainly Italians, Poles and Russian Jews. The general factors affecting the health of infants are the same in the two neighborhoods. They have the same water and milk supplies, the same temperature, and the same number of flies. The difference, as Smillie sees it, is that a much larger proportion of the foreign mothers nurse their babies exclusively, while many of the infants in the American district were fed on milk, particularly on condensed milk. Fifteen cases were being fed on the same brand of condensed milk, but repeated examination of this milk failed to reveal the dysentery bacillus. Nine cases were due to ice cream cones. Twenty-seven cases were due to direct contact. This seems to be an important factor in the etiology of the disease, for in every family where the hygiene was faulty and where the sick child remained more than one week there resulted contact cases of the disease. The author believes that bacillary dysentery is introduced into such communities as these by a carrier and that once introduced other factors may aid in its spread.

H. C. K.

Meningitis of Mumps. Marcel Levergne, *Arch. de méd. d. enf.*, 1917: XX: 182-188.

Involvement of the central nervous system is a not infrequent complication of epidemic parotitis. The clinical manifestations of this involvement are usually slight or entirely absent. In 1902, Rene Monod examined the

cerebro-spinal fluid of eight children with mumps, apparently uncomplicated, and found a very marked pleocytosis in six. These cases of "latent meningitis" are nearly always unrecognized, since the positive diagnosis depends entirely on the examination of the cerebro-spinal fluid. Other cases show mild symptoms which can be made out clinically or at least reasonably suspected. The symptoms are a slight elevation of temperature, mild headache and accelerated pulse, disappearing in a few days and eventuating in complete recovery.

Occasionally, however, a very acute meningitis comes on and these are the cases in which it is imperative to make an accurate diagnosis in order to differentiate the type of meningitis. The onset is here abrupt, with vomiting, high fever (40° C.), rigidity of the neck, positive Kernig's sign, delirium and sometimes convulsions, pupillary changes and nerve palsies. In such a case described by Lannons and Lemoine there was even an aphasia accompanied by a right hemiplegia. The resemblance to acute epidemic cerebro-spinal meningitis is often complete. Differential diagnosis is essential for prognosis and treatment.

Practically all the cases of meningitis of mumps, even the fulminating variety, recover spontaneously. Such was the outcome in a boy nine and one-half years old reported by the author.

The differential diagnosis is possible only by an examination of the cerebro-spinal fluid. In the meningitis of mumps, the fluid is clear but shows a marked excess of globulin and a high pleocytosis; the differential count reveals about equal percentages of polymorphonuclears and lymphocytes. Micro-organisms are absent.

J. E. McC.

ABSTRACTS OF GYNECOLOGY AND OBSTETRICS

The Beginnings of the Birth-Control Movement. J. A. Field, *Surg. Gynec. & Obst.*, 1916: XXIII: 185.

The modern birth-control propaganda, commonly traced back to the decade of the seventies in England, has in reality a continuous history of a century. Malthus's "Essay on the Principle of Population" has called attention to the excessive propensity for reproduction, and had argued that the great source of misery and vice was to be found in over-population. Malthus offered no more practicable solution of the difficulty than the suggestion that the poor should remain unmarried and continent until they were in a position to support any children which might be born to them. Certain contemporaries of Malthus, less unwilling than he to question the traditional code of sex morality, boldly asserted that the true solution was to encourage early marriage, but by means of contraceptive methods to prevent the birth of children beyond their parents' power to support. As early as 1823 a definite propaganda was launched with the object of acquainting the English laboring classes with the justification of birth-control and the ways of accomplishing it. Knowlton of Massachusetts, in 1833, and Drysdale of Edinburgh, in 1854, published books on sex physiology in which birth-control was advocated and described.

It is greatly to be desired that the best judgment of the medical profession should be brought to bear on the momentous problems to which the control of conception gives rise.

W. D. F.

The Functional Glands and Their Relation to the Treatment of Functional Gynecological Diseases. M. Rabinovitz, *Am. J. Obst.*, N. Y., 1916: LXXIV: 177.

After discussing at considerable length the various ductless glands and their interrelation, the author comes to the following conclusions:

1. Functional gynecological diseases should be studied objectively only, applying the same methods of investigation as are employed in the detection of organic disorders.

2. The pathology of functional diseases is outside the realm of cellular morphology. It invades the fields of physiology and biochemistry. Many of these disturbances are so subtle in nature, that they escape detection by the present means at our disposal, and some will probably never be solved.

3. To define a disease as functional we must be assured that all organic factors have been eliminated. For just as much harm may be done by submitting organic cases to functional therapy as by applying surgical treatment to some functional diseases.

4. It is not sufficient to merely ascertain which gland of the endocrine series is responsible for certain functional disturbances, but it is also essential to be informed about the interglandular relation that this gland bears to the other ductless glands under normal and abnormal states.

5. Owing to the intra- and interglandular reciprocity that exists between the ductless glands, a functional disease is in its final analysis never a uniglandular but a polyglandular malady. It is true that the predominant symptoms are characteristic of the disturbance of the gland that is mainly affected, but the concomitant disturbances are just as important and are due to the involvement of other ductless glands, which have been acted upon by this particular gland and which in turn react upon it.

6. The ideal in organotherapy will be reached when, (1) functional diseases will be properly diagnosed; (2) when the organic products offered for sale will be standardized and possess a stable physiological potency; (3) when the active principle, not only of each gland, but of the different parts of the compound glands, such as the ovary, the hypophysis, and adrenals, will be isolated.

W. D. F.

Ureter Catheter Drainage in the Treatment of Renal Infections. John R. Caulk, *J. Am. M. Ass.*, 1917: LXVIII: 675.

The author discusses the value of the method as a conservative means of surgical drainage for infected renal retentions, especially where it is desirable to retain the cause of physiological obstruction as illustrated by pregnancy.

Renal retention so common during pregnancy, especially in primipara, is more usually unilateral and more often on the right side, due to the fact that during pregnancy the uterus is obliquely placed in the abdomen with the fundus inclined to the right and rotated around its long axis bringing the right border closer to the pelvic brim. Obstruction is more common at the fifth and sixth month since at this time the greatest diameter of the uterus occupies the superior strait at which point the ureter has less protection by soft parts.

Three grades of retention are classified. In the first the retention is small, the contents under great pressure, the fibers of the renal pelvis under tension but have not lost their tone. The catheter introduced into the pelvis brings forth jets of urine, and the renal function is little if at all disturbed.

In the second type there is more distention and the muscle fibers are more weakened, but still capable of returning to normal function. The catheter in such a pelvis returns urine in drops and the renal function is impaired.

In the third degree distention the kidney tissue is damaged, the pelvis stretched beyond repair and the function destroyed or greatly impaired.

With the lesser degrees of distention several drainings of the pelvis may be sufficient, but it may be necessary to leave the catheter in place for several days at a time. It is left for three days and daily instillations of 25 per cent argyrol given. It then is removed for several hours and again

reinserted. Such treatment may be continued over quite a period of time and if not effectual in curing the condition will usually relieve the patient and permit her to go to term, after which surgical interference may be carried out.
W. D. F.

ABSTRACTS OF DERMATOLOGY

Practical Points in Roentgen Therapeutics. Simpson C. Augustus, *J. Cutan. Dis. incl. Syph.*, 1917: XXXV: 231.

The author sounds a warning to those treating skin diseases and cancer with the Roentgen Rays. He feels that in a large number of skin diseases such as lichen planus, psoriasis, certain forms of eczema, pruritus ani, Duhring's disease, etc., it is better to try internal and external medication first. In a series of borderline cases, among which he would include, favus, tinea, capitis, hyperidrosis, bromidrosis, hypertrichosis, chronic rebellious acne, keloidal acne and coccogenic sycosis, the X-ray is perhaps indicated. However, the distance between the therapeutic dose and the dose that will cause a severe burn is so short that we must proceed with great caution. In fact in hypertrichosis he does not advise treatment on this account.

As a rule one may say that in the general class of skin lesions an over-dose of ray is unpardonable, while in the malignant class this is sometimes quite necessary.
H. N. C.

A Sketch of My Research on Syphilis. J. E. R. McDonagh, *J. Cutan. Dis. incl. Syph.*, 1917: XXXV: 222.

The author considers that the *Spirochaeta pallida* is not the sole cause of syphilis but only the adult phase of the coccidial protozoön-leucocytozoön syphilidis.

From his studies he feels that luetic serum is peculiar in that the protein particles are more numerous and larger than they are in other diseases. He describes the Wassermann reaction as on a purely physical basis, depending upon the number and size of the particles in the serum being tested.

As the author himself states, one must refer to his voluminous writings to fully understand his theories in regard to syphilis, its biology and treatment.
H. N. C.

The Annular Macular Syphilide, or So-called Neuro-syphilide. Howard Fox, M. D., *J. Cutan. Dis. incl. Syph.*, 1917: XXXV: 215.

The author describes a rare form of cutaneous syphilis, which is seen almost entirely in the so-called late secondary or tertiary periods of the disease. It differs from the early macular syphilide in that the lesions are fewer in number and larger in size. They form circles and portions of circles and are of a bright red color which later takes on a yellowish tone. There is practically no scaling and there is a total absence of subjective symptoms. This syphilide has a decided tendency to recurrence, even under liberal treatment. Unna calls it a neuro-syphilide and considers it analogous to the circinate lesions of leprosy and that it is a syphiloma of vasmotor nerves.

H. N. C.

ABSTRACTS OF OPHTHALMOLOGY

Eye Injuries from Eyeglasses. Hans Lauber, M. D., Private Dozent of Ophthalmology at the University of Vienna. *The Ophthalmoscope*, 1914: XII: 201.

Injury to the eyes by breaking eyeglass lenses is very rare in consideration of the great number of persons wearing them. Since we do not possess very

accurate knowledge of the absolute number of individuals wearing glasses, it is not possible to compute the proportion of such injuries to the total number of wearers of glasses. In order to obtain an approximate idea of the frequency of eyeglass injuries, the author compared them with the entire number of patients he had examined, and found that five such cases had occurred among 150,000 patients, *i.e.*, one in 30,000 cases. The first case of such injury occurred after he had seen 85,000 patients, while during one year three cases were seen.

The conclusions reached were deduced from the five cases seen by the author and from the five cases seen by Vogt. They are as follows:

The forces causing such accidents are mostly severe, and generally of a kind to which one is but exceptionally exposed.

It is possible that glasses sometimes protect the eyes in accidents caused by large objects, by diminishing the force or by changing its original direction.

Probably spectacles are more dangerous than eyeglasses, because the latter drop off much more readily than spectacles. As to whether framed or unframed glasses are more dangerous, could not be decided from the material at hand, but the author is of the opinion that under the usual conditions of life, framed eyeglasses are the safer. For sporting purposes, he believes that spectacles with horn frames and wire temples are probably the best.

Among the reported cases, were none of injury to females, they being much less exposed to injury than males. A factor to be considered in this connection is that in Germany and Austria, females wear glasses much less than males, the cosmetic moment being more important there than in America.

In but one case did the injury affect a child, and once it affected a man of sixty. All other cases were those of young men.

The wearing of glasses involves a certain degree of danger, which is very small, and which cannot be considered as a sufficient reason against the wearing of glasses in general, especially as they much more frequently prevent than cause injury, even when not worn as a protection from mechanical injuries.

R. B. M.

Injuries to the Eye from Broken Spectacle and Eyeglass Lenses. F. D. Vreeland, *The Ophth. Rec.*, 1916: XXV: 289.

In order to secure data concerning these injuries, the author addressed a questionnaire to one hundred and thirty-five ophthalmic surgeons. From the replies received it was concluded that such injuries are very rare. Rimless spectacles were shown to be less safe than other styles of mounting, because the spectacles occupy a fixed position, and the rimless lenses are more easily broken. Noseglasses are more easily displaced than spectacles and the eyes are therefore less often injured by them. In most of the injuries reported, concave lenses were worn. This is no doubt explained by the fact that such lenses are often very thin at the center and are easily broken there, the fragments of glass from the center of the lens being prone to strike the cornea. Convex lenses being thick at the center, are less often broken, and tend to deflect a flying object. In many cases glasses are a protection rather than a menace, and when consideration is given the nature of the force which causes these accidents, it is reasonably certain that the injury would have been greater but for the protection afforded by the lens. The greatest number of these injuries have occurred in men, since they are more exposed to accidents than are women. However, the injury is often a household one, or acquired in an athletic game.

R. B. M.

Fur Infection of the Conjunctiva. Arnold Lawson, London, *The British Journal of Ophthalmology*, 1917: I: 310.

There are reported three cases of the infection of the conjunctiva of children whose parents were of the prosperous classes, and whose homes were of the cleanest and best. In the first case profuse purulent discharge and marked swelling of the eyelids, together with a purulent and slightly sanguinous nasal discharge followed shortly upon a romp with the cat, during which the child frequently buried its face in the cat's fur. The author's notes on the bacteriological findings were lost, but it is his impression that the staphylococcus pyogenes aureus was found in the discharge from the eyes and that the same organism was isolated from the cat's fur.

In the second case there occurred swelling of the lids of one eye, while the bulbar conjunctiva was swollen and reddened. The face on this side was swollen, and over the parotid gland there was a brawny induration which was continuous with an indurated mass in the neck, consisting apparently of swollen glands. Streptococci were found in the conjunctival scrapings and also in the skin swabbings from a Persian cat which the patient was accustomed to cuddle.

The onset of conjunctival tubercle occurred in a third child shortly after repeatedly hugging and cuddling a farm-yard cat. Tubercle bacilli which resembled the bovine type were obtained from the conjunctival scrapings in this case. Examination of the fur and skin of the cat was not permitted.

The author has drawn attention to these cases in order to emphasize the danger of cats as a means of disseminating disease, and to point out that as pets, cats are a source of danger chiefly to the children who cuddle them and bury their faces in the septic fur.

R. B. M.

ABSTRACTS OF LARYNGOLOGY, RHINOLOGY AND OTOTOLOGY

Septic Sore Throat. Henicka and Thompson, State Board of Health, Wisconsin, *J. Am. M. Ass.*, 1917: LXVIII: 1307.

In the same journal the above epidemic is further discussed. The interesting factors in the epidemic are given as follows:

First. Virulence of the infection.

Second. Tracing the source of infection to six (6) cows.

Third. Possibility of the cows becoming infected from the milkers.

Fourth. Large number of families infected.

Fifth. Small numbers of contact cases.

Sixth. Short period of incubation.

Seventh. Abrupt checking of the epidemic (boiling the milk).

While the epidemic was being studied bulletins were issued advising all people to boil their milk. The result was an immediate checking of the epidemic.

Out of a herd of twenty-six (26) cows, the possible source of the epidemic, three (3) were found as having mastitis in one quarter. "The milk from these cows did not show signs of garget, as the term is generally understood. It was not thick or clotted and did not contain blood." The milk of three (3) other cows showed streptococci in enormous numbers. The dairy was far above the average farm dairy. "The barn was well constructed with cement floor and steel stanchions, and was fairly well lighted and ventilated. Running water was supplied in a tank in the center of the barn. The herd consisted of forty (40) c-grade Jerseys, twenty-six (26) of which were being milked at this time." The infection seemed to be not only from milk but from ice cream supplied by this dairy. Children were rarely affected. "Only two (2) cases were found which could be classed as contact cases. The percentage of population infected was 34.53. The percentage of families infected was fifty (50)."

The conclusions reached are as follows: First—That the prompt boiling of the milk and disinfecting of discharges from the patients stopped the epidemic. Second—"The epidemic furnishes additional proof that pasteurization of bottled milk under official supervision is the only method of securing a safe milk supply."

W. B. G.

An Epidemic of Septic Sore Throat Due to Milk. Rosenow and Hess, *J. Am. M. Ass.*, 1917: LXVIII: 1305.

An epidemic sore throat in Galesville, Wis., a town of 1,200 inhabitants, was investigated by the authors. This epidemic was in all respects similar to the one in Chicago in 1911 and 1912 investigated by one of the authors. The disease, after an incubation of three (3) to five (5) days, began usually with a severe chill and temperature ranging from 102 to 105. Accompanying the sore throat was glandular enlargement, intense aching of the muscles and severe prostration. Complications were common. These included pleurisy, pericarditis, endocarditis, arthritis, peritonitis, myositis and synovitis, as well as erysipelas and otitis media. There were eleven (11) deaths. Out of 200 persons affected 95 were found to have used milk from a single dairy. Examination of this dairy showed that "during the three (3) weeks previously all of the milkers, and the wife of one of the dairymen, either had been or were still ill with severe sore throat, and that a number of the cows had had mastitis for several weeks." Smears and cultures from throats of persons ill with the disease showed enormous numbers of diplococci. Similar organisms were grown from the milk of the infected cows. These organisms were found fatal to animals, rabbits and mice. A monkey, whose throat was smeared with the cultures, exhibited signs of erysipelas and died.

The author's conclusions are: First—That virulent bacteria may be present in the udders of cows with no demonstrable signs of the disease. Second—It is practically impossible to handle milk without risk of contamination. Third—Inspection of dairies cannot possibly safeguard the public health. Fourth—Efficient pasteurization should be universally adopted.

W. B. G.

Relation of Tonsillar and Nasopharyngeal Infections to General Systemic Disorders. By S. J. Crowe, S. Shelton Watkins and Alma S. Rothholz, *Johns Hopkins Hosp. Bull.*, 1917: XXXVIII: 311.

A careful study has been made of one thousand cases operated on for removal of tonsils and adenoids at The Johns Hopkins Hospital during a five year period.

Every case was admitted to the surgical wards of the hospital. A routine physical examination was made before the operation, and the patient not discharged until all danger of post-operative complications had passed.

In order to determine the relation of infections in the tonsils and nasopharynx to various general disorders, patients have been followed up and examined subsequent to their discharge from the hospital. As many patients as possible were studied from whom tonsils had been removed as a therapeutic measure for the following conditions: Infectious arthritis, rheumatoid arthritis, myalgia or myositis, acute rheumatic fever, chorea, nephritis, and hypertrophy of the cervical glands.

Histological examinations were made of the tonsils and adenoids of one thousand cases:

139 were from colored patients, and of these 11, or 7.9% were tuberculous.

861 were from white patients, and of these 35, or 4% were tuberculous.

It was impossible in any of these cases to foretell from the appearance of the tonsil whether or not it contained a tuberculous focus.

Based upon the study of the series, the conclusions are as follows:

Indications for Tonsillectomy.

1. Local disorders in the upper air passages:

- (1) Hyperplasia of the tonsils causing difficulty in swallowing, articulation or breathing.
- (2) Frequent tonsillitis or quinsy. In these cases a careful examination must be made of the teeth, accessory nasal sinuses, nose and ears. Infection in any one of these situations may be primarily responsible for the frequent tonsil attacks.
- (3) A chronic laryngitis or bronchitis may often be benefited by a nose or throat operation.
- (4) A chronic catarrhal or suppurative otitis media or an Eustachian tube affection.
- (5) Chronic diphtheria carriers. Some of these cases will clear up after removal of the tonsils and adenoids. Often a pure culture of the Klebs-Löffler bacillus, virulent for guinea-pigs, may be obtained from the bottom of the crypts of the excised tonsils in cases that have no clinical manifestation of their presence.
- (6) Any of the various "reflex neuroses" in children; such as asthma, paroxysmal nocturnal attacks of coughing, enuresis nocturna, and sometimes convulsive seizures resembling petit mal. These are sometimes due to tonsillar or nasopharyngeal disease.
- (7) New growth. The carcinomas are best treated by operative measures. The sarcomas, however, usually respond promptly to radium treatment. We have, so far, had six cases of primary lympho-sarcoma of the tonsil or in the nasopharynx, with involvement of glands, that have remained well for two years or longer after radium treatment.

2. For local trouble in the cervical glands draining the tonsils:

- (1) Simple hyperplasia of the glands at the angle of the jaw. This condition is very common in children and young adults, and is an evidence of a chronic tonsil or nasopharyngeal infection.
- (2) Tuberculous cervical adenitis. We believe these cases are best treated by: (1) putting the nose and throat (the portals of entry for the tubercle bacilli) in normal condition; (2) removal or local incision and curettage of the caseating glands; (3) the judicious administration of tuberculin; and (4) general hygienic measures—with especial emphasis on the necessity of rest.

3. For general systemic disorders secondary to a focus of infection in the tonsils:

- (1) Infectious arthritis in which the periarticular changes predominate.
- (2) Myalgia or myositis.
- (3) The early stages of a glomerulo-nephritis.
- (4) The various nervous symptoms designated as "neurasthenia."
- (5) Occasionally, an iritis, refractive to all treatment, may be benefited by a tonsillectomy; but in these cases lues or tuberculosis should first be considered as an etiological factor.
- (6) The rare conditions, in which the chief symptoms are septic temperature; leucocytosis; general muscular and joint pains; general intoxication with negative findings on physical examination except for large, succulent tonsils.

4. As a prophylactic measure:

- (1) In chorea, acute rheumatic fever and heart lesions, it is often advisable to remove the tonsils and adenoids in order to prevent further cardiac lesions that may result from an acute tonsillitis. The operation should never be undertaken, however, during the acute stage of the disease. There is nothing to be gained by such a procedure, and the consequences might be serious.
- (2) In the cases of chronic nephritis and arterio-sclerosis that give a history of repeated attacks of tonsillitis, a tonsillectomy, by preventing further acute attacks, may be of decided benefit to the patient.

The Contra-indications for Tonsillectomy:

1. A tonsillectomy should never be undertaken during the acute stage. It is best to wait at least three weeks after all symptoms have subsided. Several cases have been reported in which a cerebral (usually temporal lobe) abscess resulted from a tonsillectomy while the tonsils were inflamed. The symptoms (headache, choked disc, vomiting, etc.) first appear about three weeks after the operation.
2. Diabetes is a contra-indication for tonsillectomy as it is for any operation necessitating general anaesthesia.
3. A tonsillectomy is rarely of any benefit in the chronic deforming types of arthritis. The operation is quite severe, and in the majority of these cases, probably does more harm than good.
4. There is nothing to be gained from a tonsillectomy during the acute stage of chorea, acute rheumatic fever or endocarditis. Our experience has shown that even after the nose and throat have been put in normal condition by operative measures, chorea, rheumatic fever and endocarditis may recur. This would indicate that the tonsils are not the only portal of entry for the organisms causing these diseases.
5. As a general rule, the tonsils should not be removed in children up to fifteen years of age solely because they are enlarged or detritus is seen in the crypts. In all of these cases the adenoids are also enlarged and should be removed on account of the damage that may result from mouth-breathing and obstruction of the Eustachian tubes. It must be remembered that there is normally a hyperplasia of the tonsils and adenoids during childhood; also that the probable function of this lymphoid tissue is to protect the lower air passages, as has been fully discussed previously. Even frequent attacks of tonsillitis do not necessarily mean that the child's tonsils should be removed; often removal of adenoids, regulation of the digestive system, and general hygienic measures will prove sufficient.
6. A general anaesthetic should not be given in cases with an incipient or advanced pulmonary tuberculosis. If an operation is absolutely necessary, nitrous oxide is the anaesthetic of choice. In cases with "latent" or "apparently arrested" tuberculous lesions, however, it is often advisable to operate on the nose and throat if the patient is subject to frequent coryza or angina attacks. The detrimental effects in these cases of acute infections of the respiratory tract seem to justify any operative procedure that will lessen the frequency of these acute attacks.

C. E. P.

ABSTRACTS OF PATHOLOGY

Experiments on the Role of Lymphoid Tissue in the Resistance to Experimental Tuberculosis in Mice. Herbert D. Taylor and James B. Murphy, *J. Exp. Med.*, 1917: XXV: 609.

The increased resistance of splenectomized mice to tuberculosis is thought to be due to the increased lymphocytosis that occurs by the 19th to the 21st day

after the operation. This is further shown by the fact that X-ray treatment of mice affects primarily the lymphoid tissues and increases the susceptibility of the animal to tuberculosis. A marked lymphoid reaction in the blood lasting several weeks follows the inoculation of a mouse with one of the transplantable mouse cancers against which it had been immunized. Such mice also exhibit a greater resistance to bovine tuberculosis than do normal animals. This increased resistance of the cancer immune mice can be removed or even changed to an increased susceptibility to tuberculosis by destroying the lymphocytes by exposure to X-rays. The lymphoid cell plays a large part in the resistance to tuberculosis. The number of lymphocytes per c.cm. of blood varies directly as the degree of resistance to tuberculous infections. The evidence of the participation of the lymphocyte in the resistance to tuberculous infections consists in (a) its constant presence in the pathological lesions of the disease, (b) its close relationship with the progress of the infecting process, (c) the susceptibility of X-rayed animals whose lymphoid tissue was thus reduced and, (d) the increased resistance of cancer immune mice in whom the lymphocyte count is high. H. R. W.

The Normal Fate of Erythrocytes—The Findings in Healthy Animals.

Peyton Rous and Oswald H. Robertson, *J. Exp. Med.*, 1917: XXV: 651.

Phagocytosis of red cells occurs mainly in the spleen, but slightly in the bone marrow and even less in the lymph glands. While phagocytosis is abundant in the dog, rat and guinea pig, it is slight in man, the rhesus monkey, many rabbits and negligible in amount or entirely absent in the cat and does not therefore suffice as a general explanation of normal blood destruction.

In accordance with the theory that disintegrating red cells would be lighter than sound ones because of some loss in substance or content and would consequently come down last when the blood is slowly centrifuged in dilute suspension, the various viscera were perfused with equal parts of citrate solution and gelatine—Locke's solution and the washings subjected to fractional centrifugalization. Unless the perfusion is done rapidly and with special technic "bodies" resembling red cells, but the product of disordered parenchymal cells, are given off and become the source of considerable confusion with true disintegrating red cells. Hemolyzing red cells and shadows of red cells are not found in the organs or in the circulating blood. The blood destruction occurs not by hemolysis but by fragmentation of the cells while they are still circulating without loss of hemoglobin. Normal blood contains small numbers of fragmentation forms—microcytes and poikilocytes or schizocytes as Ehrlich called them. They always accumulate in the spleen but occur inconstantly in other organs. The fragments apparently undergo further subdivision. They occur not only in species, such as the cat, in whom phagocytosis is negligible as a means of red cells destruction, but also in those (dogs) in which it is an important process. No other means of cell destruction other than this fragmentation of red cells and the phagocytosis in the same animals was found. H. R. W.

The Normal Fate of Erythrocytes; II, Blood, Destruction in Plethoric Animals and in Animals with a Simple Anemia. Oswald H. Robertson and Peyton Rous, *J. Exp. Med.*, 1917: XXV: 665.

Rabbits rendered plethoric by repeated direct transfusion soon acquire the ability to dispose of large quantities of blood in the absence of demonstrable hemolysins or agglutinins. In such animals there is a marked accumulation of schizocytes in the spleen and less so in the bone marrow, and all evidence shows that the destruction of the red blood cells in plethoric rabbits occurs largely if not almost wholly by fragmentation without loss of hemoglobin.

The destruction of red cells by fragmentation goes on actively in anemic animals with the accumulation of fragments in the spleen. However, the schizocytes circulate longer than those of normal and plethoric animals which are rapidly taken out of the blood. The schizocytes seen in animals with a severe anemia due to hemorrhage are not direct products of the bone marrow, but represent portions of cells fragmented while circulating. The fragmented cells are mostly immature newly formed cells, hastily formed by the bone marrow to meet the unusual situation and, being unable to withstand the wear and tear of function, break down resulting in a vicious cycle. The anemia renders the bone marrow unable to produce proper cells and those that are put forth are soon fragmented thus prolonging the condition. This state of affairs probably occurs in many human anemias. The presence of large accumulations of microcytes and poikilocytes in the spleens of anemic and plethoric animals shows that the spleen exercises some important function in connection with these forms. The same is true of normal animals where the findings are the same though less striking. In those species in which phagocytosis is negligible the normal fate of the red cells is fragmentation while circulating to a fine hemoglobin-containing dust which is rapidly removed from the blood, but whose ultimate fate remains to be determined. Apparently the fragments are removed from the blood by the spleen and under exceptional conditions by the bone marrow.

H. R. W.

DEPARTMENT OF THERAPEUTICS

Conducted by J. B. McGEE, M. D., Cleveland

The Heart: W. S. Thayer, in the *Medical Record* for April 14th, presents some observations on some of the commoner deviations from the ordinary met with in the examination of the heart of supposedly normal individuals. He summarizes as follows: (1) In the first place, reference is made to what he believes to be a truth, namely, that in the growing boy the heart is often disproportionately large as compared with the general physical development. Such a condition is in no sense alarming if the boy is about at puberty, unless the heart is really larger than it should be in the adult. (2) The striking mobility of the normal heart is mentioned—a circumstance not always appreciated. (3) The common reduplication of the second sound during inspiration, a reduplication dependent on delay in the closure of the pulmonary valves, while present in a good many apparently normal individuals, may perhaps be regarded as confirmatory evidence of muscular weakness, if present throughout the cycle, or in association with other signs of cardiac disease. It is a phenomenon deserving of more careful study. (4) It has been pointed out that a slight protodiastolic gallop—a third sound—is audible in a large proportion of young people in the recumbent or left lateral posture; that without other evidence of cardiac disease this may be regarded as a perfectly normal phenomenon; that in a few young people a faint presystolic gallop may be heard; that such a sound, if very slight and unassociated with other evidence of disease, is also of no pathological significance. He also refers to the lack of pathological significance of many murmurs so frequently found, and finally discusses the significance of extrasystolic irregularities, and the belief is expressed that they are in many instances associated with conditions pointing to an unstable nervous system, or to other general influences, as intoxications—tobacco digitalis—which may hypothetically increase the cardiac irritability without production of true organic lesions. Clinically such cases appear to be common. On the other hand, extrasystoles are often associated with actual myocardial lesions, or with hypertension, or with mechanical cardiac defects. In smokers, in the neurotic, in women at the menopause, in individuals who have been subject to special mental strain, if there be no

other evidence of cardiac insufficiency or disease, the extrasystole may be regarded as of little importance, but where the heart is enlarged, in the presence of obvious vascular sclerosis, or where with extrasystoles which have not been frequent enough of themselves to produce much impairment of function, there is yet evidence of diminished cardiac capacity, the extrasystole should be regarded as a possible evidence of anatomical myocardial change. The hope has been expressed that electrocardiographic studies may in time give us important prognostic help in such instances.

Coal-tar Analgesics: In the *New York Medical Journal* for April 4th, Louis T. de M. Sajous, treating of the coal-tar derivatives, states that while one cannot but deplore the substitution of acetanilid for acetphenetidin or antipyrine in the majority of proprietary preparations put out for independent use by the layman, the question arises whether in view of the practically prohibitive cost or complete unavailability of acetphenetidin and antipyrine, acetanilid might not at present with sufficient safety be prescribed by the medical practitioner in lieu of the former agents. The tendency to produce collapse in the event of excessive dosage or idiosyncrasy is universally held greater in the case of acetanilid than in that of acetphenetidin or even antipyrine. The total number of cases of toxic action witnessed by physicians questioned by Keller, Margan and Rupp of the U. S. Bureau of Chemistry, published in 1909, was 614 in the case of acetanilid, 105 in that of antipyrine, and 95 in that of acetphenetidin. The overwhelming predominance of acetanilid over the other two agents, in proprietary preparations, with the consequent much more extensive use by the public, and greater likelihood of the physician being called to see cases of acetanilid poisoning, the fact that it was in use before the other two, its use in excessive amounts and the fact that acetanilid has been rather largely used locally, account for numerous cases of poisoning from absorption of the drug. Among the 614 cases of acetanilid poisoning only 289 or less than half arose in cases where the drug had been ordered by a physician, whereas among antipyrine and acetphenetidin cases this ratio was far different, 79 out of 105, and 65 out of 95 cases, respectively, occurring in subjects to whom a prescription had been given. Among the cases of poisoning, 14 resulted from external use of the drug, whereas from local use of acetphenetidin or of antipyrine, no toxic action has been recorded. Using only the figures relating to cases in which the drugs had been prescribed by physicians, we obtain products of 780.3 for acetanilid, 371.3 for antipyrine, and 503.7 for acetphenetidin. On further analysis he finds the factors 2.71 for acetanilid, 1.93 for antipyrine, and 1.65 for acetphenetidin, which may be taken to express roughly the relative danger to life in the use of the three remedies according to the data in the report. On the whole, these figures tend to show that the risk of fatal poisoning from acetanilid, *when prescribed by a physician*, is probably less compared with acetphenetidin or antipyrine than has been generally supposed. The impression of far greater lethal power on the part of acetanilid, while correct to a certain limit, has been somewhat exaggerated by its indiscriminate, ill-advised use by the laity.

The Ductless Glands: The April number of the *Therapeutic Gazette* states editorially that the constantly accumulating evidence which indicates that the ductless glands are closely interlocking in their function increases rather than diminishes the intense interest which we feel in this comparatively new field of physiology and clinical medicine. It would seem that there still remain functions and glands to be more thoroughly investigated, which in their investigation will throw a flood of light upon many functions of the body which heretofore have been but little un-

derstood. All too frequently the laboratory investigator falls into the habit of considering his results as belonging to the realm of abstract science, and cares little for the practical application of the results which he achieves. A notable exception to this is found in the contributions and work of Cameron of Boston, who is broad enough in his view to see that the real interest in such investigations is due to the light which they may pour upon the study of human beings in various conditions of disease. He reiterates (*Jour. A. M. A.*) what he has so clearly stated before, that, when there is great excitement the suprarenals secrete adrenalin, which in turn acts as a key which liberates sugar from the liver, resulting in an increased quantity of this substance in the blood and from this increased quantity the muscles, which are utilized in the escape of the individual, animal or man, from danger, are provided with a flood of nutritional material. His investigations seem not only pregnant with possibilities in regard to the use of the glands themselves, but also to open up new fields for therapeutic investigation. It is not only possible but likely that certain remedies which have been found very useful by clinicians may act indirectly by changing the activities of the glands of internal secretion. Thus in pneumonia and other conditions in which the respiration may be seriously impaired, it is possible that the suprarenal bodies, recognizing the demand on the part of the respiratory muscles for a full supply of sugar, may secrete an increased quantity of adrenalin, and thereby enable these muscles to carry on vigorous movements for many hours. Every practitioner of experience can look back over his career and remember cases in which children and adults have breathed at the rate of 40 or 60 times a minute, hour after hour, without apparently suffering as great a degree of exhaustion as would be expected. Anyone who will stand by the side of such a patient and try to breathe as rapidly will find that before two minutes have elapsed he is rapidly becoming exhausted, but in the healthy individual there is no demand on the suprarenal bodies for an increased secretion of adrenalin, whereas in the patient whose life depends upon rapid respirations and whose central nervous system may recognize danger, a condition arises which is closely akin to that in which an excess of adrenalin is secreted in an animal which, suffering from fright, endeavors to escape from an enemy which may be pursuing him. It may be that many drugs of high repute do not act directly as stimulants to the heart or respiratory centre, but upon glands which in turn affect these vital parts.

Bacterial Vaccines: In the *Indianapolis Medical Journal* for April, G. H. Sherman writes upon the use of bacterial vaccines in acute infection. There is no phase of modern therapeutics as important as the successful treatment of acute infective processes. If we can eliminate an acute infection before it has extended sufficiently to become serious, we are not only instrumental in avoiding prolonged illness, associated with much suffering, but saving lives as well. The all-importance of adequately controlling acute infections is apparent to everyone, and that such a control is impossible from the use of drugs is well recognized. When we come to the question of applying therapeutic immunization it is important to realize that, aside from specific infections like gonorrhea or tuberculosis, a small variety of pathogenic organisms, including the streptococcus, pneumococcus, staphylococcus, and colon bacillus, are responsible for the major portion of the diseased conditions encountered in the daily routine of the busy practitioner, and that mixed infections by these various organisms are most common. Clinical symptoms depend largely on the disturbance of the function of the organ which has become infected. Rapidly extending infections may safely be ascribed to the streptococcus, while intense localized infections are liable to be due to staphylococci. As experience increases, doctors are steadily, surely drifting toward giving mixed vaccines the preference. It would appear theoretically that in extensive acute infections vaccines

should be employed in smaller doses than in sub-acute and chronic cases; but from experience he finds that the reverse is true, and the recognition of this fact is important. In extensive acute infections larger doses are tolerated with evidences of less reactions, and they may be given at shorter intervals than in sub-acute and chronic cases. In the less severe acute infections like colds and allied infections, the results from the early use of vaccines are also striking if treatment is started early, and inoculations repeated at one or two-day intervals. The importance of treating minor acute infections with vaccines is not sufficiently appreciated. That serious infective processes start from a small focus is not usually regarded. Extensive vaccine users employ stock preparations regularly, as experience teaches them that this procedure is most satisfactory. He asserts that the tremendous advantages from the early administration of bacterial vaccines in the treatment of acute infections should eliminate the expectant plan of treatment from modern therapeutics. From what this treatment has accomplished, no one has a right to allow acute infections to progress unaided without applying the advantages which therapeutic immunization offers.

Pituitary Solution: *American Medicine* for March states that there is an excellent means of replacing the circulatory stimuli which are lacking when hypoadrenia becomes a part of the symptom-complex of pneumonia. The active principle of the posterior lobe of the pituitary gland exerts just the kind of influence that is greatly needed. It is a circulatory stimulant of undoubted merit, for it increases the power of the heart, lessens its excessive rate, and raises the blood pressure. He has frequently found that an injection of one mil. (or less) of pituitary solution is a valuable means of increasing waning circulatory efficiency of a functional character, and sometimes the therapeutic results of a single small dose are as marked in pneumonia as they are in the better known obstetrical applications of the same remedy. He cites two cases in which excellent results followed its use. Many times the pituitary principle has been given in shock and collapse with most salutary results. Its use as a prophylactic of these conditions is just as rational and the results far better because of the obvious better condition of reactivity likely to be present early in a disease. It is well to administer in well-advanced pneumonia with consolidation, and the usual symptoms, one-half mil. several times a day with clear-cut effects on the condition of the patient, as well as the clinical findings, especially those connected with the circulation.

Aconite: In the April number of the *American Journal of Clinical Medicine*, H. J. Achard presents a study of aconite. The special cases in which aconitine is useful are those of sthenic character, in the relief of congestion. The results from its use are most apparent when the inflammation is not extensive nor very severe, as in the catarrhs of children, in tonsillitis or in acute sore throat. In these comparatively mild diseases, especially if the drug is given during the earliest stage, the dry, hot, burning skin grows comfortably moist in a few hours and then becomes bathed in a profuse perspiration, and with this comes speedy relief from many of the distressing sensations. If caught at the start, quinsy or sore throat rarely fail to yield within twenty-four to forty-eight hours under the full influence of aconite. In sudden congestions from exposure to cold and wet, with a consequent "cold" headache, stoppage of menstruation, and so on, the prompt use of the drug usually will restore the circulatory equilibrium and bring back the flow, in that way averting serious illness. George F. Butler believes there is no better combination to break up a cold than aconite and Dover's powder, the former being given at frequent intervals for an hour, and followed by 8 or 10 grains of the opium and ipecac powder. Wm. Hanna Thompson

values aconite next to opium in the relief of pain due to inflammation, especially of the serous membranes and of the heart, in which the coal-tar analgesics are comparatively useless. He states that the pharyngeal discomfort, also tonsillitis and acute laryngitis attendant upon an attack of cold, are relieved with certainty by aconite. He also asserts that in angina pectoris the main reliance must be upon aconite, which should be given in large doses and continued for months. In accordance with its action as a vasodilator, it has been recommended in conditions associated with hypertension, and is said to be preferable to the nitrites in the treatment of arteriosclerosis. Wm. H. Thompson claims that it is particularly efficient and is also permanently beneficial in this condition as a vasodilator, and he continues its use for long periods without fearing depression of the heart.

Adrenaline: Henry R. Harrower, in the *New York Medical Journal*, considers the oral administration of adrenaline. Experiments have led to an impression that adrenaline was not effective when given by the mouth and that to obtain other than the well-known results it must be given by hypodermic or intravenous injection. For years he has been convinced by personal experience that this opinion was misleading and is convinced that unquestioned therapeutic effects have followed the oral administration of adrenaline. He refers to many reports of its value in various conditions when given by the mouth, and states that Ercolani called attention in 1910 to the benefit from epinephrine by the mouth in nephritis, commending the harmlessness, ease and efficiency of this method of treating kidney disease, again and again proving useful, and Borelli's experience has confirmed his statements. Harrower believes that the position of those who have contended that the oral use of adrenaline is useless, is fallacious.

CLEVELAND'S EMBARGO ON PROPRIETARY MEDICINES

The following proprietary medicines were excluded from the Cleveland market by the Health Division on the ground of misbranding. According to the laws any drugs with false, misleading or fraudulent claims on the package or literature accompanying the package may be considered as misbranded. Unfortunately this does not cover the newspaper advertisements, in which the widest claims are made by statement and implication. In this list it is the intention of the Health Division to give each month the medicines on which embargo has been placed, or others in which adequate information is at hand showing the claims and the composition on which these claims are based.

(1) Varlex; Varlex Manufacturing Co., Kansas City, Mo. Claims: For making treatment for liquor and tobacco habit. Analysis: Milk sugar, 100 per cent.

(2) Sargol; Sargol Co., Binghampton, N. Y. Claims: Flesh builder. Put out of business by the U. S. Post Office Department. Fraud order and Federal Court \$30,000 fine.

(3) Kilmer's Swamp Root; Dr. Kilmer & Co., Binghampton, N. Y. Claims: Kidney, liver, bladder medicine; for stone in bladder, blood and mucus in urine, catarrh of bladder; a helping hand when in danger of fatal kidney diseases, etc. Contents, $5\frac{1}{4}$ fluid ounces. Price, 50 cents. Analysis: Alcohol, 9.30%; water, 48.00%; Vol. oil, trace; sugars, 39.56%; other solids, 2.69%, consisting of terpenes, volatile oils, small amounts of a number of drug residues. The Division of Health believes this to be misbranded, since sugar and alcohol are not suitable treatment of miscellaneous kidney and bladder diseases and the drug residues are almost negligible except for mild laxatives, which amount to less than $\frac{1}{2}\%$ of the whole.

(4) Life Plant; The Life Plant Co., Canton, Ohio. Claims: No stimulants; for rheumatism, kidney diseases, liver, woman's diseases, heart disease, etc. Analysis: Alcohol, 10%; water, 88.78%; solids, 1.22%, consisting mostly of burnt sugar and a slight amount of drug residue, probably yellow dock.

(5) Father Nazarian's Mekhitarin. Claims: Cures heart trouble, purifies blood, relieves blood rheumatism and builds up the body; a hygienic medical preparation and a most delicious drink. For internal use. Contents, 12 fluid ounces. Price, \$1.00. Analysis: Alcohol, 15.70%; water + trace vol. oil, 53.52%; solids, 30.77%, consisting mostly of sugar, and colored with ginger or cinnamon or both.

(6) Father Nazarian's Rheumatic Cure. Claims: Rheumatism cure; bruises and swellings, headache, neuralgia, catarrh, kidney trouble, piles, corns, falling hair. Not marked "External" or "Internal." Contents, 5½ fluid ounces. Price, \$1.00. Analysis: Alcohol, 60.02%; solids, 0.40%; water + trace of oil, 39.58%.

(7) Hull's Superlative; A. J. Hull Medicine Co., Findlay, Ohio. Claims: Paralysis, infantile paralysis, liver, kidney, blood, diabetes, Bright's disease, and almost all ills. Contents, 2 fluid ounces. Price, \$1.00. Analysis: Alcohol, 24.30%; water, 66.42%; solids, 9.22%, consisting mostly of cinchona, and the balance several drugs having slight laxative and diuretic properties.

(8) Q-Ban Hair (Color) Restorer; Hessig-Ellis Drug Co., Memphis, Tenn. Claims: Guaranteed to be harmless. Nature remedy. Makes hair glossy and handsome. Not a dye. Restores color glands. Contents, 6 ounces. Price, 50 cents. Analysis: Alcohol, 8.00%; glycerine, 10.06%; water, 77.32%; lead acetate, 1.85%; sulphur, 2.73%. Is really a hair paint, and several cases of illness from its use have been reported.

NEW AND NONOFFICIAL REMEDIES

Parresine.—A mixture composed of paraffin, 94 to 96 per cent, gum elemi, 0.20 to 0.25 per cent, Japan wax, 0.40 to 0.50 per cent, asphalt, 0.20 to 0.25 per cent, and eucalyptol, 2 per cent. Parresine acts mechanically. It is used in the treatment of burns, "frostbite," "chilblains" and for covering denuded surfaces. For use parresine is melted and applied while liquid by means of an atomizer or brush. The Abbott Laboratories, Chicago. (*Jour. A. M. A.*, May 12, 1917, p. 1406.)

Siomine.—Hexamethylenamine tetraiodide, containing 78.5 per cent iodine. Siomine is decomposed in the intestine with formation of hexamethylenamine and iodid. It produces the effects of ordinary iodides, from which it differs only in that, being insoluble in water, it may be administered in solid form. It is marketed in the form of Siomine Capsules containing, respectively, ¼, ½, 1, 2 and 5 grains of siomine. Howard Holt Co., Cedar Rapids, Iowa. (*Jour. A. M. A.*, May 12, 1917, p. 1406.)

Sterile Ampules of Mercury Salicylate, 1½ grains.—1 Cc. of suspension containing 1½ grains mercuric salicylate in a fatty vehicle solid in ordinary temperature. Each ampule contains more than 1 Cc.

Sterile Ampules of Mercury Salicylate, 2 grains.—Each 1 Cc. of suspension contains 2 grains of mercuric salicylate in a fatty vehicle solid at ordinary temperature. Each ampule contains more than 1 Cc. of suspension. Hynson, Westcott & Dunning, Baltimore, Md. (*Jour. A. M. A.*, May 12, 1917, p. 1407.)

Diarsenol.—A proprietary brand of arsenphenolamine hydrochloride, chemically identical with salvarsan. For a discussion of the action, uses, chemical and physical properties see New and Nonofficial Remedies, 1917, under salvarsan. Diarsenol is marketed in hermetically sealed ampules con-

taining, respectively, 0.1 Gm., 0.2 Gm., 0.3 Gm., 0.4 Gm., 0.5 Gm., 0.6 Gm., 1.0 Gm., 2.0 Gm. and 3.0 Gm. diarsenol. The Council accepted diarsenol for New and Nonofficial Remedies as the available supply of salvarsan appeared to be insufficient to supply the demand, and this preparation conforms to the rules of the Council for acceptance of proprietary preparations. Diarsenol is made in Canada by the Synthetic Drug Company under a license issued by the Commissioner of Patents of Canada. The Farbwerke-Hoechst Company, however, announces that the sale of brands of arsenphenol-amine hydrochloride other than that sold as salvarsan is, in its opinion, an infringement of its rights. The company states that all violations of these rights will be prosecuted under the law. (*Jour. A. M. A.*, May 12, 1917, p. 1407.)

Sofos.—A mixture of sodium dihydrogen phosphate and sodium hydrogen carbonate rendered stable by coating the particles of one of the constituents with disodium hydrogen phosphate. One part of sofos has the same phosphate value as 1.75 parts sodium phosphate U. S. P. When sofos is treated with water sodium phosphate (Na_2HPO_4) is formed and carbon dioxide is set free. Sofos has the physiologic action of sodium phosphate. It is claimed to have an advantage over the effervescent sodium phosphate preparations in that it is free from citrate or tartrate. The General Chemical Co., New York City. (*Jour. A. M. A.*, May 26, 1917, p. 1551.)

During May the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Nonofficial Remedies:

Non-proprietary articles:

Calcium Cacodylate.

Thorium Nitrate.

Thorium Sodium Citrate Solution.

Thorium Sodium Citrate Solution, Stronger.

Abbott Laboratories:

Chlorazene Surgical Cream.

Anthony-Hammond Chemical Works:

Betanaphthol Benzoate.

Armour & Company:

Kephalin—Armour.

Borcherdt Malt Extract Company:

Borcherdt's Malt Extract with Cascara Sagrada.

Borcherdt's Malt Extract with Cod Liver Oil.

Borcherdt's Malt Extract with Creosote.

Hynson, Westcott & Dunning:

Thorium Solution for Pyelography, H. W. and D., 10 per cent.

Thorium Solution for Pyelography, H. W. and D., 15 per cent.

Sterile Ampules of Mercury Salicylate, $1\frac{1}{2}$ grains.

Sterile Ampules of Mercury Salicylate, 2 grains.

H. K. Mulford Company:

Ampules Calcium Cacodylate Solution—Mulford.

Synthetic Drug Co.:

Diarsenol.

The Academy of Medicine of Cleveland

COUNCIL MEETING

At a meeting of the Council of the Academy of Medicine held Tuesday, May 8, 1917, at the University Club, the following members were present: The Vice-President, Dr. C. H. Lenhart, in the chair; Doctors Bernstein, Birge, Evans, Bunts, Follansbee, Klaus, Sawyer, Selzer, J. J. Thomas, J. E. Tuckerman and M. J. Lichty and by invitation Doctors H. A. Berkes, A. J. Skeel and F. J. Wood.

The minutes of the last meeting were read and approved.

On motion the following were elected to active membership: W. W. Donaldson, F. A. Euler, F. W. D. Finke, Chas H. Carvin, A. B. Grossman, E. E. Kepner, C. H. Kocinski, C. F. Mitchell, E. B. Rosinski, Louis Rubin, M. H. Shipley, S. J. Spotanski.

On motion the names of the following applicants were ordered published: Anthony F. Ciegotura, K. O. Cieslak, M. R. Kellum.

On motion the resignation of Dr. F. C. Larimore, of Mt. Vernon, Ohio, was accepted.

On motion Dr. M. J. Miller was transferred to associate membership.

Dr. Bunts reported for the special committee appointed to make a canvass of the physicians of Cuyahoga County as to military preparedness, stating that the work of that committee was completed and asking to have the committee discharged, as any further work along that line could be handled by the Auxiliary Medical Defense Committee of Cuyahoga County.

A communication from Dr. N. M. Jones to Dr. Updegraff suggesting "that a committee of three be appointed to devise ways and means whereby the practice of such members as are absent in active service of their country, will be conserved and the income of such practice during their absence be wholly or in part given to them or to their dependent relatives remaining behind" was read.

After discussion, Dr. J. J. Thomas moved that such a committee be appointed by the President to devise such a plan and to report to the Council. Seconded by Dr. Birge. Carried.

The question of the position to be taken by delegates of Cuyahoga County at the state meeting upon methods of increasing the revenue for the State Association was discussed at length. Dr. Birge offered the following motion which was seconded by Dr. Bunts, "That the Council instruct the delegates to oppose any raising of revenue by an assessment based upon the principle of income tax, but that the delegates be free to use their own judgment in supporting any other method of raising the necessary state revenue." Carried.

REPORT OF MEETING OF THE EXECUTIVE COMMITTEE OF THE WESTERN RESERVE MEDICAL ALUMNI ASSOCIATION—OCTOBER 16, 1916

This Committee was given at the June meeting full power to act in re-drafting the constitution, arranging all annual clinics and entertainments, deciding upon a publication or a bulletin, and generally outlining the activities of the Association.

Present—Drs. Thomas, Luck, Wood, Tuckerman, Spenser, Herrick. Dr. Rhu absent. Also present *ex officio* on invitation, Drs. Follansbee and Cummer.

Question of the bulletin was taken up. It was decided to publish some form of bulletin three times a year, sizes and prices to be gotten by Dr. Herrick; to report at the next meeting.

Drs. Spenser and Tuckerman were appointed a committee and agreed to organize the efforts to get Alumni news for the bulletin.

Dr. Luck agreed to look after the advertising.

Next meeting set for Wednesday, November 15, 1916.

REPORT OF MEETING OF THE EXECUTIVE COMMITTEE OF THE WESTERN RESERVE MEDICAL ALUMNI ASSOCIATION—NOVEMBER 15, 1916

Present—Drs. Wood, Thomas, Rhu, Spenser and Herrick. Dr. Follansbee on invitation.

Prices of the proposed bulletin were submitted as follows:

24 pages and cover, size 6 x 9, 2,000.....	\$125.00
16 pages and cover, size 6 x 9, 2,000.....	95.00
24 pages and cover, size 5 x 8, 2,000.....	116.00
16 pages and cover, size 5 x 8, 2,000.....	88.00

The size 6 x 9, 24 pages, was decided upon.

The committees, as before noted, to work.

It was decided to have the meeting during commencement week of Western Reserve, and lasting from Tuesday morning to Saturday, June 12th to 16th.

It was decided to have a smoker on Tuesday evening, June 12th, and the dinner on Thursday evening, June 14th. Various speakers were mentioned for the address after the dinner, and arrangements were made for writing them.

REPORT OF MEETING OF THE EXECUTIVE COMMITTEE OF THE WESTERN RESERVE MEDICAL ALUMNI ASSOCIATION—FEBRUARY 12, 1917

Present—Drs. Spenser, Thomas, Luck, Wood, Tuckerman and Herrick.

On further consideration of the bulletin problem it seemed best to make a proposition to combine the bulletin and the *Cleveland Medical Journal*.

On the following outline basis this was talked over individually with the members of the Executive Committee. All agreed to the plan as outlined and voted in favor of it.

The matter was then taken up with the Executive Committee of the *Cleveland Medical Journal* and the combination unanimously agreed to.

A copy of the proposed Constitution which was drafted by Dr. Moorehouse was read, and various changes suggested.

Meeting adjourned 8:30 P. M.

CONSTITUTION OF THE WESTERN RESERVE MEDICAL ALUMNI ASSOCIATION

Two years ago, when it was decided to try and rejuvenate Western Reserve Alumni meetings, various means for assisting in gaining this object were looked for.

The address list has been corrected as much as possible, and is being constantly added to. The Constitution was found to be in an imperfect state, and to this end a motion was passed at the June, 1916, meeting, empowering the Executive Committee to draft a new Constitution and submit it at the June, 1917, meeting. The following is this Constitution as drawn up.

It will be noted that the management of the annual meetings is left in the hands of an Executive Committee, which is to consist of the President, Secretary, and Treasurer, ex officio, and four other members, one to be elected each year.

Name. Membership

The name of this Association shall be the Western Reserve Medical Alumni Association.

All graduates of the Cleveland Medical College, the Charity Hospital Medical College, the Medical Department of Wooster University, the Medical Department of Western Reserve University and the Medical Department of Ohio Wesleyan University are members of this Association.

Officers and Duties

The officers of this Association shall be a President, two Vice-Presidents, a Secretary, and a Treasurer. The duties of these officers shall be those pertaining to the offices to which they have been elected. There shall also be an Executive Committee of seven members, whose duties shall be to arrange for the annual meetings, dinners and entertainments of the Association, to transact all business and to have charge of its publications. The President, Secretary and Treasurer, *ex officio*, shall be members of the Executive Committee. The remaining four members of the Executive Committee shall be residents of Cuyahoga County and shall each serve four years.

Annual Dues

The annual dues of the Association shall be one dollar per member. No member of the Association shall be privileged to attend its annual meeting or to vote for its officers who shall not have paid his annual dues.

Date of Meeting

The annual meeting of the Association shall be held in Cleveland during the Western Reserve University Commencement, unless, under exceptional circumstances, a different date is set by the Executive Committee.

Election of Officers

At the first general meeting of the Alumni during the annual gathering, a Nominating Committee of five members shall be elected on nomination from the floor, two of whom shall be from Cuyahoga County. This Committee, at the regular business meeting held after the annual dinner, shall bring in a list of nominees for the several offices and for the one member of the Executive Committee. At the 1917 meeting one member of the Executive Committee shall be elected to serve 4 years, one 3 years, one 2 years, and one 1 year, and thereafter one shall be elected each year to serve 4 years. The officers and members of the Executive Committee shall be elected by ballot.

Amendments

Amendments to this Constitution shall be submitted to each member before the annual meeting of the Association, and when so submitted may be passed by a two-thirds vote of the members present at said meeting.

REASONS FOR AND METHOD OF COMBINATION OF THE WESTERN RESERVE MEDICAL ALUMNI BULLETIN AND THE CLEVELAND MEDICAL JOURNAL

It will be thoroughly appreciated that any association with a serious object for its existence, and especially one of a large group of medical men keenly desirous of keeping up to date in professional and scientific advancement, requires some form of publication to further its objects. Such a publication as an Association Bulletin would best be used for announcements of the annual clinical gatherings; reports of the proceedings of the same to those who are unable to attend, discussions of all subjects which would further the interests of the alumni and of the Medical School.

In Cleveland, however, there is at present a medical journal which has had a long career, struggling against commercialism, holding to its own ideals and with their present successful realization. A combination of these two factors seems most efficient for all concerned.

The following proposition was, therefore, conceived and proposed to the Alumni Executive Committee, and having been approved was presented to and approved by the Executive Committee of the *Cleveland Medical Journal*.

Agreement Between Western Reserve Medical Alumni Association and Cleveland Medical Journal Company Regarding Annual Publications:

This memorandum is made regarding arrangement between the Cleveland Medical Journal Company and the Western Reserve Medical Alumni Association. In order to place such a union of objects in an appreciable form, the following outline is submitted for agreement between the two organizations. It is recognized that by such an outline the aims of the two organizations will be best kept in mind and accomplished:

1. That in one issue of the *Cleveland Medical Journal* yearly there be published the papers, reports and general proceedings of the annual Alumni Association meeting, in full or in abstract, as decided by the Executive Committee of the Association and the Editorial Board of the *Journal*. This material to be furnished by the Alumni Association.

2. That this Alumni Issue be sent to all the alumni, whether present subscribers of the *Journal* or not.

3. That the Alumni Association pay the Cleveland Medical Journal Company at the rate agreed upon, this to include total cost and mailing.

It has been found that of the 1,811 members of the Alumni Association in 1916, four hundred and thirty-four are already subscribers of the *Cleveland Medical Journal*.

This leaves thirteen hundred and seventy-seven to whom the Alumni Association would send the May issue of the *Journal*.

4. That this agreement, in order to be effective and binding, must be renewed from year to year. This, of course, is to insure the Association not running into debt from which it would be impossible to extricate it.

F. C. HERRICK,

Chairman Executive Committee Alumni Association.

J. P. SAWYER,

President Cleveland Medical Journal Co.

PROVISIONAL PROGRAM ANNUAL MEETING OF WESTERN
RESERVE MEDICAL ALUMNI ASSOCIATION,
JUNE 12, 13, 14, 15, 1917

Headquarters for registration, Western Reserve Medical School Building, St. Clair avenue, corner East 9th street.

TUESDAY, JUNE 12

Lakeside Hospital—

- 8:30 to 12:30 A.M. Surgical Clinic—Dr. Briggs, Dr. Birge, Dr. Sloan
9:00 to 12:00 A.M. Gynecologic Clinic—Dr. Weir, Dr. Fullerton.
9:00 A.M. Clinic on Diseases of Children—Dr. Gerstenberger and assistants.
1:30 P.M. Clinic on Ear, Nose and Throat Surgery—Dr. Ingersoll, Dr. Chamberlin, Dr. Pitkin.
1:30 P.M. Demonstration and Clinic on Diseases of the Eye—Dr. Bruner.
2:30 P.M. Medical Clinic—Dr. Phillips.
2:00 P.M. Orthopedic Surgery—Dr. Bauman, Dr. Jones.
1:00 to 3:00 P.M. Demonstrations in Lakeside, Charity, Babies' Dispensary and Hospital, Mt. Sinai Dispensaries by members of the Visiting Staffs daily.
8:00 P.M. Complimentary smoker—University Club, 3813 Euclid avenue.

WEDNESDAY, JUNE 13

Charity Hospital—

- 8:30 A.M. Surgical Clinic—Dr. Bunts. (By card, capacity 15.)
8:30 A.M. Gynecologic Clinic—Dr. Humiston. (By card, capacity 15.)
1:00 to 5:00 P.M. Surgical Clinic—Dr. Hamann. (By card, capacity 15.)
1:00 P.M. Surgical Clinic—Dr. Herrick. (By card, capacity 15.)
2:00 P.M. Ear, Nose and Throat Clinic—Dr. Large.

Babies' Dispensary and Hospital—

- 10:00 A.M. A Clinic on Infant Feeding—Dr. Ochsner.

St. Alexis Hospital—

- 9:00 A.M. Surgical Clinic—Dr. Gallagher, Dr. Follansbee, Dr. Ward, Dr. Schmoldt, Dr. Corrigan.

City Laboratories—City Hall—

- 1:30 P.M. Wassermann reactions—Dr. Perkins, Dr. Frey.
2:30 P.M. Visit to City filtration plant—Dr. Perkins.

Babies' Dispensary and Hospital—

- 1:30 P.M. Clinic—Dr. Gerstenberger, Dr. Ruh, Dr. Goehle.
3:00 to 4:00 P.M. Medical Clinic—Dr. Sawyer, Dr. Oldenberg.
11:00 A.M. X-Ray studies by Dr. Thomas.

THURSDAY, JUNE 14

Mt. Sinai Hospital—

- 8:30 to 9:00 A.M. Ear, Nose and Throat Clinic—Dr. Steiner, Dr. Quittner.
9:00 to 9:30 A.M. Gynecologic Clinic—Dr. Biskind.
9:30 to 10:00 A.M. Orthopedic Clinic—Dr. Walter G. Stern.
10:30 to 11:30 A.M. Surgical Clinic—Dr. Blahd.
11:30 to 12:30 A.M. Medical Clinic—Dr. Maschke, Dr. Berger.
12:30 P.M. Luncheon at Mt. Sinai.

St. Luke's Hospital—

9:00 to 12:00 A. M. Surgical Clinic—Dr. A. F. Spurney, Dr. Stepp, Dr. A. J. Skeel, Dr. Stotter, Dr. Lauder.

9:00 A. M. Medical Ward Demonstrations—Dr. Stoner.

Medical College Building—

1:00 to 2:00 P. M. Dislocations and Fracture Complications—Dr. Todd.

1:30 to 2:00 P. M. Teratology and Pathological Embryology—Dr. Ingalls.

2:00 to 3:00 P. M. Surgical Anatomy—Dr. Hamann.

3:00 to 3:30 P. M. Nasal Pathology, Lantern Slides—Dr. Ingersoll.

3:00 to 3:30 P. M. Epidemiological Studies—Dr. Perkins.

3:30 to 4:00 P. M. Parafine treatment of burns—Dr. Sollmann.

4:00 to 5:00 P. M. Bedside Physiology—Dr. Macleod.

7:00 P. M. Annual dinner at the University Club—Annual address.

FRIDAY, JUNE 15

City Hospital—

10:00 A. M. Medical Clinic by Dr. Alfred Stengel, Professor of Medicine, University of Pennsylvania.

12:00. Lunch at City Hospital.

1:00 P. M. General Clinic—Medicine—Dr. Carter, Dr. Cole, Dr. Geib, Dr. Cummer, Dr. Scott. Ear, Nose and Throat Surgery—Dr. Tuckerman, Dr. McDonald. Pediatrics—Dr. Ruh, Dr. Goehle, Dr. Beekel. Diseases of the Eye—Dr. Stuart. Neurology—Dr. Keyser, Dr. Bigelow. Intraspinal Treatment of Cerebro-Spinal Syphilis—Dr. Cummer. Surgery—Dr. Hamann, Dr. Lenhart, Dr. Thomas, Dr. Herrick, Dr. Weber.

St. John's Hospital—

1:30 P. M. Ear, Nose and Throat Surgery—Dr. Prendergast. Eye Clinic—Dr. Cogan. X-ray in Medical and Surgical Work—Dr. Corlett. Surgical Clinic—Dr. Gallagher. Medical Clinic—Dr. Updegraff.

German Hospital—

1:30 P. M. Surgical Clinic—Dr. Becker, Dr. Masenheimer.

BOOK REVIEWS

Blood and Urine Chemistry. By R. B. H. Gradwohl, M. D., and 'A. J. Blaivas. C. V. Mosby, St. Louis, 1917. Price, \$2.50, cloth.

An excellent collection of the technique of the newer methods of blood and urine analysis—this volume is well worth while. As a laboratory manual and as a reference work it is of great value and should have a wide distribution.
H. S. F.

Food and Dietetics. By Robert Hutchison, M. D., Edin., F. R. C. P., London. Fourth Edition. 617 pages. Wm. Wood & Co., New York, 1917. Price, \$4.00 net; cloth.

This excellent work is a veritable encyclopedia of foods and dietetics. It is highly recommended as a reference work in arranging diets and is most complete. In this day of specialization it is not to be wondered that so few pages are given to the dietetic management of diabetes. One must consult a special work for the details of that diet, but one does desire—in this work—a greater precision in carrying out the diet management of typhoid fever, tuberculosis, and Grave's disease.
H. S. F.

ACKNOWLEDGMENTS

Pulmonary Tuberculosis. A Handbook for Students. By Edward O. Otis, M. D., Professor of Pulmonary Diseases and Climatology, Tufts College Medical School, Boston; formerly Visiting and Consulting Physician to the Massachusetts State Sanatorium (Rutland); Fellow and Former President of the American Climatological and Clinical Association; Corresponding Member of the International Tuberculosis Institute; Consulting Physician to the Boston Dispensary, Tuberculosis Department, etc. W. M. Leonard, Boston, 1917. Price, \$1.75.

Botanic Drugs: Their Materia Medica, Pharmacology and Therapeutics. By Thomas S. Blair, M. D., Editor Medical Council; Author of "Public Hygiene," "A Practitioner's Handbook of Materia Medica and Therapeutics," and "Pocket Therapeutics;" formerly Neurologist to Harrisburg (Pa.) Hospital. Large type; fully indexed, 394 pages. Therapeutic Digest Pub. Co., Cincinnati, 1917. Price, \$2.00.

The Practical Medicine Series, comprising ten volumes on the year's progress in Medicine and Surgery. Under the general editorial charge of Charles L. Mix, A. M., M. D., Professor of Physical Diagnosis in the Northwestern University Medical School, Vol. I, General Medicine. Edited by Frank Billings, M. S., M. D., head of the Medical Department and Dean of the Faculty of Rush Medical College, Chicago. Assisted by Burrell O. Raulston, A. B., M. D.; Resident Pathologist, Presbyterian Hospital. Series 1917. The Year Book Publishers, Chicago. Price, \$1.50.

Diseases of the Genito-Urinary Organs and the Kidneys. By Robert H. Greene, M. D., Professor of Genito-Urinary Surgery at the Fordham University, New York, and Harlow Brooks, M. D., Professor of Clinical Medicine University and Bellevue Hospital Medical College.. Fourth edition thoroughly revised. Octavo of 666 pages, 301 illustration. W. B. Saunders Company, 1917. Philadelphia. Price, \$5.50.

Diseases of the Stomach, Intestines and Pancreas. By Robert Coleman Kemp, M. D., Professor of Gastro-intestinal Diseases at the Fordham University Medical School. Third edition, revised and enlarged. Octavo of 1096 pages, with 438 illustrations. W. B. Saunders Company, 1917. Philadelphia. Price, \$7.00.

The Surgical Clinics of Chicago. Vol. I, No. 11, with 99 illustrations. Published bi-monthly W. B. Saunders Company, Philadelphia. April, 1917. Price, \$10.00.

The Medical Clinics of Chicago. March, 1917. Vol. 1, No. V. Published bi-monthly. W. B. Saunders Company, Philadelphia. Price, \$8.00.

Dr. Lyman Spalding. The Originator of the United States Pharmacopoeia, Co-Laborer with Dr. Nathan Smith in the Founding of the Dartmouth Medical School, and its First Chemical Lecturer; President and Professor of Anatomy and Surgery of the College of Physicians and Surgeons of the Western District, at Fairfield, N. Y. By his grandson, Dr. James Alfred Spalding. W. M. Leonard, publisher. Boston, 1916. Price, \$3.50.

MEDICAL NEWS

American College of Physicians.—The second convocation of the American College of Physicians will take place at Hotel Nassau, Long Beach, Long Island, on June 5th, 1917. About 90 per cent of all the Fellows who have not entered on duties connected with the war are expected to be present. About fifty physicians of national repute will be admitted to Fellowship.

Life Extension Institute.—Dr. Eugene Lyman Fisk, Medical Director of the Life Extension Institute, 25 West 45th street, New York City, has been appointed a member of the Sub-Committee on Alcohol of the Committee on Hygiene and Sanitation of the General Medical Board of the Council of National Defence, of which Surgeon General Rupert Blue is Chairman.

Surgeon General Rupert Blue is also a member of the Life Extension Institute's Hygiene Reference Board, which is composed of one hundred of the most eminent scientists in the United States and Europe.

American Proctologic Society will hold its nineteenth annual meeting in New York City, June 4 and 5, 1917. Headquarters and place of meeting in the Hotel Astor. The profession is cordially invited to attend all meetings.

Preliminary Program
Commencing June 4, 1917

Executive Council meets at 8 A. M. First Regular Session at 9 A. M. Annual Address by President.

"The Place of the Proctologist in a Diagnostic Group,"
Alfred J. Zobel, San Francisco, Cal.

Memorial Address—"Our Late Member, George J. Cook, Indianapolis, Ind."
Alois B. Graham, Indianapolis, Ind.

Papers:

1. Adult Rectal Prolapse; Two Cases and a Contrast—Ralph W. Jackson, Fall River, Mass.
2. Adenomyoma of the Rectum—Frank C. Yeomans, New York City, N. Y.
3. Summary Reports of Nine Cases of Peri-Colic Membrane—John L. Jelks, Memphis, Tenn.
4. Should the Sphincters be Divided?—Rollin H. Barnes, St. Louis, Mo.
5. Neglected Rectal Examination—James A. McVeigh, Detroit, Mich.
6. Enemas and Colonic Flushing as Etiologic Factors in Appendicitis—William H. Stauffer, St. Louis, Mo.
7. The Relationship of Hemorrhoidal Disease to the Health Balance—William M. Beach, Pittsburg, Pa.
8. The Underlying Factors of the Clamp and Cautery Operation for Internal Piles—W. Oakley Hermance, Philadelphia, Pa.
9. The Pathology of Hemorrhoids—J. Coles Brick, Philadelphia, Pa.
10. Report of a Case of Idiosyncrasy to Quinine and Urea Hydrochloride—Collier F. Martin, Philadelphia, Pa.
11. Neoproctology—A Glimpse Into the Future—Jerome M. Lynch, New York City, N. Y.
12. The Post-Operative Factor in Rectal Surgery—Barney J. Dryfuss, New York City, N. Y.
13. The Non-Surgical Treatment of Splanchnoptosis—Rolla Camden, Parkersburg, W. Va.

Rectal clinics will be held by Drs. Samuel G. Gant and Jerome M. Lynch. The hour and place will be announced later.

The Annual Meeting of the Alienists and Neurologists.—The coming meeting of the Alienists and Neurologists will be held at the Hotel La Salle (Chicago) during the three days of July 10th, 11th and 12th. At this meeting the topics of the program will be considered with special emphasis. Contributions to these subjects are earnestly solicited.

It is the intention of the managers to begin each session promptly to the minute scheduled, and without formalities or delays present the program as finally printed. To do this it will be necessary to limit every paper to fifteen minutes, and to limit each discussion to five minutes. The program will be so arranged that each session will have a number of papers that can be presented as alternates to those listed, should the readers be absent. The discussion of the papers read will occupy the last hour of the session, or, if a session considers two unrelated topics, the discussion will occupy a suitable portion of the hour after the papers have been presented.

To those presenting papers requiring the display of statistics, charts, maps, plans, drawings, or other exhibits we would ask that such displays be in the hands of the manager of the program not later than July 7th, the Saturday before the meeting begins. All topics requiring the use of the stereopticon will be arranged for presentation at one of the evening meetings, probably the meetings of Monday and Tuesday evenings, July 9th and 10th. A synopsis of each paper to be placed upon the permanent program must be in the hands of the Secretary on or before Saturday, June 23rd.

This preliminary announcement is being sent out to every medical journal in the United States and Canada, and to the members of every psychiatric and neurologic society in the United States in the hopeful expectation of receiving communications from readers. The time for preparation is relatively short and expedition in publishing notices of this meeting will be appreciated.

There are no fees whatever connected with this society. The members of the Chicago Medical Society will welcome visitors to the city, and most of the Chicago Hospitals will be open to them on presentation of a card of registration.

Contributions of the subjects listed upon the following tentative program are desired.

Address Secretary A. and N., Room 1218, No. 30 Michigan avenue, Chicago.

Program:

TUESDAY, JULY 10th.

Morning Session 9:00 A. M. to 12:30 P. M.

Topics—

State Hospital Architecture. Exhibition of plans and photographs.
State Hospital Custody. Administrative Problems of State Hospitals.
Hospitals for Cure, Research, and Prevention.
Colonies for the Productive Insane.
Therapeutic Employment and Re-Education.

Afternoon Session, 2:00 P. M. to 5:30 P. M.

Topic—

General Paralysis of the Insane.

Evening Session—

One evening session will be held open for an entertainment or for important topics, should any arise. At present, Monday evening, July 9th, or Tuesday evening, July 10th, seem most preferable.

WEDNESDAY, JULY 11th.

Morning Session, 9:00 A. M. to 12:30 P. M.

Topics—

Manic Depressive Insanity, and the Minor Psychoses.
Delirium Tremens, Traumatic Mental Disturbances.

Afternoon Session, 2:00 P. M. to 5:30 P. M.

Topics—

Legal Aspects of Insanity.

The evolution of legal practice involving the question of mental integrity.

Relations of Insanity to Criminal Practice.

Evening Session—

Topics—

Special Program. A joint meeting with the Chicago Medical Society in the Marshall Field Annex Building.

THURSDAY, JULY 12th.

Morning Session, 9:00 A. M. to 12:30 P. M.

Topics—

Dementia Praecox.

Afternoon Session, 2:00 P. M. to 5:30 P. M.

Topics—

Epilepsy.

The Feeble-minded.

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No. 6

DIAGNOSIS AND TREATMENT OF CONGENITAL PYLORIC STENOSIS

BY CLIFFORD G. GRULEE, M. D., AND DEAN D. LEWIS, M. D.

CHICAGO, ILLS.

Introduction

For some years congenital pyloric stenosis has been a subject of great interest to the surgeons and pediatricians. It presents surgical problems at an age when surgery is rarely resorted to and for this reason it is extremely hard to estimate the surgical risk. We think that the report of eighteen cases, although small in number, may be of some value from the standpoint of diagnosis and treatment. We have excepted no case which has been admitted to the Presbyterian Hospital during the past ten years. One case in which there was some doubt as to the diagnosis, which remained in the hospital only 24 hours and left against our advice, was diagnosed as congenital pyloric stenosis because the symptoms seemed to point more to this than to any other, but as the diagnosis in this case was not certain and since we lost sight of the child after it left the hospital, we have not included it in this list. With this exception all of the cases of true stenosis of the pylorus have been included among these observations.

Case I. Charles S., aged nine weeks, entered the Presbyterian Hospital on the service of Dr. Cotton, the 12th of February, 1909.

His history was that of an infant who was not able to retain any nourishment; vomited milk very soon after ingestion. His father had been killed a month before the birth of the child, which was a terrible nervous shock to the mother. Normal birth; birth

weight, $7\frac{1}{2}$ pounds. He was nourished at the breast three weeks, during which time he retained no nourishment. He was then taken from the breast, and after the first of January fed on peptonized milk by mouth and three times a day rectally. The mother said that the infant had vomited a sanguinolent material. There was some doubt as to this. The child had lost much in weight. The mother said that he oftentimes vomited all of his food, at other times only a part, and oftentimes he retained two or three feedings and then vomited a great deal. He seemed to vomit more than he ingested.

On examination one sees an emaciated infant; the abdomen was not protuberant, but one could see large waves which crossed the upper part of the abdomen from left to right, taking about 20 seconds to pass. No bulging or nodule in the region of the pylorus was found.

On entering the hospital the child weighed 6 lbs. 4 oz. The temperature was subnormal, remaining generally below 98.2° F. During the first 24 hours the child was given an ounce of peptonized milk and 2 ounces of water every two hours. The next day the food was changed, one part milk to four parts water, an ounce every two hours. On the 16th the weight was 6 lbs 2 oz., a gain of 7 oz. in two days. On the 16th the child became worse and was given $\frac{1}{5}$ milligram strychnia, 10 drops camphorated oil, 10 drops cognac, the cognac and camphorated oil being repeated every two hours until the death of the infant at five in the evening. This child was not operated upon.

At autopsy the following was found: Stomach—the length along the little curvature from the cardia to the pylorus was 10 c.m.; from the cardia to the pylorus along the greater curvature, 24 c.m.; circumference, 10 c.m. Pronounced thickening of the walls. At the pylorus a mass of muscular tissue, 2 c.m. long and 8 m.m. in thickness, including the mucosa, was found. The tissue was resistant, firm, and of a grayish color. The mucosa was perfectly smooth and showed projecting folds; no ulceration. The mucosa was practically normal. The circumference of the pyloric orifice was about 10 m.m.

General diagnosis: 1st,—Congenital pyloric stenosis; 2nd—Hypertrophy and dilatation of the stomach. 3rd—Rachitic rosary. 4th—Marked emaciation.

Case II. Baby X, case of Dr. Lewis, born on the 16th of October, 1910. The child had vomited since birth; always been

hard to nourish. There had been a constant loss of weight. The symptoms developed more and more up to the time of operation, when the child weighed a little less than four pounds.

The baby was operated upon at the Presbyterian Hospital at the age of 51 days. At operation a typical tumor of congenital pyloric stenosis was found. A posterior gastro-enterostomy was



CASE II. Baby O. Age three years.

done. The child was taken home almost immediately after the operation. There was some elevation of temperature for a few days and also some vomiting. After the first week convalescence was rapid. The child developed normally and at four and a half years appeared to be perfectly healthy. There was no derangement of the gastric functions.

Case III. Florence N., aged 9½ weeks, entered the Presbyterian Hospital on the service of Dr. Lewis on the 26th of October, 1912. The complaint was a rapid loss of weight; it weighed almost a pound less than at birth, and vomited all of its food. The time of vomiting varied from a few minutes to an hour or more after

feeding. During the first three weeks the child had not vomited although it had not increased in weight. At this time it began to vomit its food and since then the vomiting had continued. The child was born three weeks before term; first child; breech presentation. Nursed at the breast during three or four weeks, then partly on the breast and partly on condensed milk. Eskay's food was then added during one week. The child had slept well up to a few nights before entrance to the hospital. Two stools a day for the first three weeks, then by means of suppositories or enemas.

On physical examination the child was seen to be pale and poorly nourished. No abnormalities were found except in the abdomen, where the superficial veins were seen to be distinctly dilated. Peristalsis was seen in the region of the stomach and a palpable mass in the region of the pylorus. On entrance the child weighed 6 lbs. 15 oz. After its operation it vomited considerably.

On the morning of the 27th of October it was operated upon by Dr. Lewis; ether anesthesia by Dr. Herb. A median incision of $3\frac{1}{2}$ c.m. was made. A large hypertrophy of the pylorus was found. Posterior gastro-enterostomy was done, one row of silk and one row of fine catgut sutures being used; the peritoneum was sutured with fine catgut; interrupted silkworm gut sutures for the skin. The sutures were removed on the 4th of November; primary union.

In this case the food consisted of milk and water, equal parts, 2 oz. eight times a day, every 2 hours, and when possible breast milk. Later it was changed to Eiweiss milch, 12 oz., 8 oz. water, $\frac{1}{4}$ oz. dextri-maltose, 5 feedings of 4 oz. each. The child was given 1/1000 of a grain of strychnia every 4 hours from the 30th of October to the 3rd of November. The child left the hospital on the 6th of November, having increased from 6 lbs. 10 oz. to 7 lbs. 3 oz. On the 11th of November the child weighed 8 lbs. and was spitting up a little. The food had been changed to 12 oz. Eiweiss milch, 18 oz. water, $\frac{1}{2}$ oz. dextri-maltose, $\frac{1}{2}$ oz. malt soup, 5 feedings of 5 oz. each. On the 5th of December the weight had only increased to 8 lbs. $\frac{1}{2}$ oz.; on the 31st the weight was 9 lbs. $14\frac{1}{2}$ oz.; on the 10th of January, 10 lbs. $8\frac{1}{2}$ oz. At this time there was no vomiting. During the latter months has been lost sight of. Up to a year it is known that the child's health was excellent and vomiting had ceased.

Case IV. Warren G., aged 17 weeks, entered the Presbyterian Hospital on the 5th of November, 1913, on the service of Dr. Grulee. The complaint was loss of weight, vomiting and constipa-

tion. This condition had existed for a week. Previous to this the child had been well. Commenced vomiting and continued to do so up to the time of its entrance to the hospital. The child had been able to retain no nourishment during this time and had lost much in weight. It was fed on the breast for two days and then on the bottle. The week before it had been given condensed milk, pro-



CASE IV. Photograph taken March 14, 1916. Age two and one-half years

portion 1 to 20. During the preceding week the child had also had Horlick's malted milk and barley water. The day previous to its entrance to the hospital it had had only warm water. The intestines had functioned well up to the time when the vomiting had commenced. It had had no stools for two days previous to its entrance. The child slept well. It was an adopted child, and it was not possible to obtain any further history.

On examination it was found that the child was a little emaciated; no other findings except a distinct enlargement of the epi-

gastrium and the presence of gastric peristalsis after feeding. On entrance to the hospital the child weighed 7 lbs. 2 oz., vomited much of its food, which consisted of 12 oz. Eiweiss milch, 6 feedings of 2 oz. each every 4 hours. On the morning of the 6th of November it was given a bottle of buttermilk and bismuth subnitrate, and on X-ray one hour after feeding no food had passed the pylorus. After 2 hours an appreciable quantity had passed.

On the morning of the 7th Dr. Lewis performed a posterior gastro-enterostomy; ether anesthesia by Dr. Herb. After operation the child was given an ounce of Eiweiss milch every 4 hours commencing 4 hours after operation. There was regurgitation, but this diminished shortly. On the 8th of November the Eiweiss milch was increased to 12 oz. and $\frac{1}{4}$ oz. dextri-maltose, 6 bottles of 2 oz. each. On the 9th this was changed to 6 feedings of 2 oz. each of breast milk. The child recovered without complications, leaving the hospital on the 27th with a weight of 7 lbs. 11½ oz., a gain in 20 days of one pound from the lowest point following the operation.

This child was not seen again until the 14th of March, 1916, at the age of 2½ years; it then weighed 25 lbs. 12 oz. It had had measles, chicken pox, and pink eye.

During some months after leaving the hospital the child had vomited and had not increased greatly in weight until about a year previous. At 16 months it was given solid nourishment and after that there was almost no vomiting. On examination a slight systolic murmur was heard at the base of the heart, probably haemic in nature; there was a slight hernia in the region of the incision, some patches of dry eczema were seen on the skin. No peristalsis was noticed after feeding.

Case V. A., a male baby, aged 2 months, was admitted to the Presbyterian Hospital, November 11, 1913. The child had been breast fed up to a month before admission. Vomiting commenced in the fourth week and has recurred after almost every feeding. The bowels have moved only every second or third day, a glycerin suppository or enema being required. There has been a progressive loss of weight. The baby is small and has a dry, weazened appearance. Nothing special was found in the general examination. Whenever the child was given water or milk, a distinct enlargement of the epigastrium was noted. Peristaltic waves could be made out, but no distinct tumor at the pylorus could be found. Vomiting occurred soon after the ingestion of food, and was projectile in

character. Examination of the stomach contents removed by a tube revealed a total acidity of 10, free hydrochloric acid 9, combined hydrochloric acid 1. Hemoglobin was 85 per cent, red blood cells 4,840,000, leucocytes 8,000. Urinalysis revealed some nuclealbumin, but was otherwise negative.

A Roentgen examination of the stomach after a bismuth meal revealed marked retention, although small shadows were seen in some of the intestinal loops.

The findings were typical of congenital pyloric stenosis, and an operation was performed November 14, 1913, three days after the child entered the hospital. Under ether anesthesia a midline incision was made in the epigastrium. When the peritoneum was opened an enormously distended and tense stomach popped out. The pylorus was enlarged—it was the size of the terminal phalanx of the middle finger—and was white, somewhat edematous and hard. It had the characteristic appearance of the enlargement associated with congenital pyloric stenosis. The stomach was so tense that it could not be manipulated easily in performing a posterior gastro-enterostomy, and therefore it was punctured as soon as the transverse mesocolon was cut through. The punctured wound was then closed with a purse string suture, as it could not be made to come easily in the line of the gastro-enterostomy. The ordinary posterior gastro-enterostomy was performed without any trouble.

Feeding was commenced immediately after the operation, and a progressive gain was noted. The baby weighed 6 lbs. 11 oz., December 2nd—eighteen days after the operation—a gain of 1 lb. 11 oz. The baby was discharged December 17th, weighing at this time 6 lbs. 12 oz.

The baby did well after leaving the hospital, but was brought back March 24th, 1914. During a few days before admission, he had an attack of difficult breathing. Fever, cough and labored breathing had been noted. Vomiting had not occurred at any time. Percussion revealed dulness over the upper lobe of each lung posteriorly. Resonance was more impaired over the right upper lobe. Bronchial breathing and moist and crepitant rales were heard over the area of dulness. A Roentgen examination of the chest over the right upper lobe revealed a shadow, but no pus was found when a needle was inserted.

The baby when admitted to the hospital the second time weighed 9 lbs. 5 oz. The weight reached 8 lbs. 6 oz. April 14th. Following

this there was a rapid gain, and April 24th the baby weighed 9 lbs. 9 oz. No vomiting was noted, and the gastro-enterostomy opening seemed to be working perfectly, judging from the rapid gain in weight and absence of digestive disturbances. The pneumonia continued from March 24th to April 7th, when the temperature became normal. During most of this time the temperature at night reached 104 to 105.8° F., with a morning remission of 2 degrees. The baby left the hospital April 28, 1914.



CASE V. Six months after operation; two minutes after bismuth meal.

The baby was brought to the hospital the third time, July 28, 1914. The symptoms at this time were high fever, cough, difficult breathing, pain in the chest and slight convulsive attacks. Illness began two days before entrance with restlessness, slight cough and rapid breathing. The weight at this time was 10 lbs. 4 oz. Respirations were labored, rapid and grunting. The breathing was mostly abdominal. Physical examination revealed consolidation of almost the entire right lung and of the left upper lobe. Blood count taken at this time revealed: Red blood cells, 4,750,000; leucocytes, 19,500.

The baby died a few hours after entering the hospital, and at the necropsy the following anatomic diagnosis was made: Lobar pneumonia. Passive hyperemia of posterior portions of the lungs.

When the abdomen was opened the stomach was found to be of normal size. At the pylorus an enlargement was found which was of approximately the same size and consistency as that found at the operation. From the duodenal side, the enlargement projected into the lumen of the bowel much as the cervix of the uterus projects into the vagina. When the stomach was opened, the lumen of the pylorus was found to be greatly reduced in size, and surrounded by a rigid wall. A fine probe could be passed through the opening. The gastro-enterostomy orifice was in the pyloric antrum, about .1



CASE V. Hypertrophy of the pylorus, nine months after the operation; gastro-enterostomy.

inch to the cardiac side of the pylorus. It measured about an inch in length. A linen suture projected into the cavity of the stomach. This had in greater part sloughed through the walls of the stomach, but still remained attached at some points.

Histologic examination of a cross-section of the pylorus revealed enormous hypertrophy of the circular muscular coats. The hypertrophy was not confined to the circular coats alone, for the longitudinal muscles also seemed to have undergone a hypertrophy. The connective tissue bundles were also larger than normal, and seemed to be involved in the process. The mucous membrane was thrown into folds and seemed to be redundant. It was not contracted, and apparently it was merely compressed by the surrounding hypertrophied muscular tissue. If a wedge of muscle were excised and compression removed, the pylorus would undoubtedly become patent. The fact has been taken advantage of in some cases in which the operation which has been performed has merely consisted of excising a piece of the hypertrophied muscle, down to the mucous membrane, to permit of its expansion. In some of the cases in which the procedure has been practiced the pylorus has remained patent and the child has developed normally.

Notwithstanding that a sloughing suture was found in the gastro-enterostomy orifice, food was apparently passing through it freely, for the child had not vomited, except occasionally during the first two days following the operation. There was no induration about the line of suture and no adhesions between the viscera and surrounding structures. Apparently the gastro-enterostomy was functioning perfectly.

A Roentgen examination of the stomach following a bismuth meal five months after the operation was performed indicated that all the food was passing through the gastro-enterostomy orifice.

Case VI. Peter S., aged 4 months 1 week, entered the Presbyterian Hospital on the service of Dr. Dodson on the 21st of July, 1914. The mother spoke no English and it was impossible to get a complete history of the case. The complaint was vomiting since the age of two weeks. Vomiting had always taken place immediately after feeding. The mother said that child vomited everything it had taken at the preceding nursing. After the first attack it remained free from vomiting for 12 or 13 days; then the vomiting recommenced, vomiting two or three times a day. This continued and increased until no food was retained. Except for this the child had been well, birth had been normal, and the child had been nursed on the breast. There were two other children, both well. The father and mother were in good health.

Physical examination showed a child smaller than the average and emaciated. The subcutaneous fat had entirely disappeared.

The child passed a large part of its time sucking its thumb. There were some palpable glands in the cervical region. The tonsils were somewhat enlarged. No other anomalies were found in the head and neck. Examination of the chest, heart and lungs negative. The abdomen was protuberant and bulging in the epigastric region. One could see the borders of the stomach and also marked peristaltic waves between the umbilicus and the xyphoid appendix to the left of the median line. A mass the size of a small marble could be



CASE VI. One hour after bismuth meal.

felt. The liver was two fingers' breadth below the costal margin and the spleen could not be palpated. Some enlarged epitrochlear glands were palpated. The urine was negative. The blood showed 4,650,000 red cells, 11,500 white, and 85% hemoglobin. After its entrance to the hospital the child had had projectile vomiting and refused food. At 11 o'clock the morning of the 22nd of July the child was given 10 grs. of subcarbonate of bismuth and taken to the X-ray room. This showed that an hour after the bismuth meal absolutely no nourishment had passed the pylorus. The second picture taken after two hours was not satisfactory. At 11 o'clock the

morning of the 23rd, the child was operated upon by Dr. Lewis; ether anesthesia by Dr. Herb. Central incision above the umbilicus. Posterior gastro-enterostomy. The abdomen was closed in the usual manner.

Immediately after the operation 1/1000 of a grain of strychnia was given and this was repeated every three hours. Food on the 24th was 4 oz. of breast milk given in quantities of 1 oz. On the



CASE VI. Photograph taken March 14, 1916. Age, two years.

25th 12 oz. of breast milk, 6 feedings of 2 oz. each. From the 26th to the 30th, 18 oz. of breast milk, 6 feedings of 3 oz. each. Immediately after the operation the temperature arose to 104.1° F., remaining there until the morning of the 25th, then it became normal and remained within normal limits. This child vomited a little after operation. The stools were always green and liquid. Vomiting ceased after 24 hours.

The child had an ordinary recovery and remained at the hospital until the 18th of September. At its entrance it weighed 7 lbs. 4 oz. After removal of the dressings on the 4th of August its weight was 6 lbs. 11 oz., a loss of 9 oz. From the 4th of August to the 9th of September its weight increased from 6 lbs. 11 oz. to 8 lbs. 2½ oz., a gain of 1 lb. 7½ oz. in 38 days, the hottest part of the year. The child left the hospital in excellent condition.

The last time we saw this child was the 14th of March, 1916, at the age of two years. It then weighed 27 lbs. 4 oz. There had been no vomiting since the operation. The child had had chicken-pox two months after the operation, measles in May, 1915, and an abscess in the neck in October, 1915. To all intents and purposes the child was perfectly normal except that a slight ventral hernia was to be seen at the upper extremity of the gastro-enterostomy wound and the abdomen was a little prominent. No peristalsis was noticed after feeding. Fluoroscopic examination by Dr. Roundtree showed that the food passed so quickly from the stomach that it was almost impossible to take a radiograph.

Case VII. Roger W., aged 6 weeks and 3 days, entered the Presbyterian Hospital on the service of Dr. Grulee on the 22nd of January, 1915. Complaint consisted of vomiting and passage of gas, slow increase in weight and irregular stools. Vomiting had lasted for two weeks; the condition was not serious but the vomiting had become worse. Sometimes vomiting had taken place immediately after feeding; sometimes a half hour after, and sometimes not for an hour. The child eructated gas and had much flatus. This condition had been noticed three days before its entrance to the hospital. Intestines functioned well and the stools were good, but at times they had been green and liquid, perhaps five or six a day. General condition of the child was good. It slept well at night, did not cry much when it passed gas and did not seem to suffer. The child was apparently five weeks premature and its weight at birth had been a little over 5 lbs. After this the child had increased, but not rapidly. It was nursed entirely at the breast for two weeks; after this it had been fed on cow's milk, 5 oz. of cow's milk, 9 oz. of water with milk sugar. This was increased to 6½ oz. milk and about an ounce of sugar in 24 hours. The family history was negative. The child was well proportioned and very well nourished, its head well formed; no anomalies were found. During the first 24 hours which followed its entrance to the hospital the child lost from 7 lbs. to 6 lbs. 12½ oz. After that up to the 26th it gained

steadily so that on the 26th it weighed 6 lbs. 15 oz. The child was put to the breast every four hours and given supplementary feedings of 6 oz. of whole milk, 6 oz. of fat free milk, $\frac{1}{2}$ oz. dextri-maltose, and 6 oz. of water, 6 feedings of 3 oz. each every 4 hours. At this time it left the hospital.



CASE VII. One hour after bismuth meal.

During its stay in the hospital the child vomited sometimes but not great quantities nor often. During this period we looked constantly for gastric peristalsis, but were unable to discover any. On the 31st of January the child returned to the hospital, after having been away five days. At that time very distinct peristaltic waves were found and we debated between a pyloric stenosis and a pylorospasm. The radiograph showed no passage of food through the pylorus an hour after ingestion.

This child was operated upon the first of February by Dr. Lewis; ether anesthesia by Dr. Herb. A pyloric tumor was found. An anterior gastro-enterostomy was done because the mesocolic vessels were too close together to allow a posterior operation. The

wound was closed by tension sutures through the skin and muscles by silk gut. Continuous normal salt enema was given and one ounce of breast milk by mouth every four hours. Some vomiting, but not marked. The child seemed in good condition until 4 o'clock in the morning of the 5th of February. It was then found that the wound



CASE VII. One hour and a half after bismuth meal.

had opened; a large part of the intestine was protruding. This was replaced by Dr. Gatewood under ether anesthesia. After this the child became steadily worse and died at 10 A. M. on the 6th.

At autopsy general peritonitis was found. There was a complete stenosis of the pylorus; the gastro-enterostomy wound remained open.

The weight of the child on the second entrance to the hospital was 6 lbs. 11½ oz.; at the time of its death, 6 lbs. 9 oz., showing that in this case the quantity of food that the child had retained after operation was sufficient to maintain life. The temperature during the time which followed operation was normal up to the morning of the 5th of February and it then reached 102.2° F. and remained high until death.

Case VIII. Charles H., age 7 weeks, entered the Presbyterian Hospital March 26, 1915. Complaint consisted of vomiting; this had been noticed first at two weeks. After that it became worse. The child usually vomited all of its food; sometimes though it would retain 2 or 3 feedings, then everything seemed to be rejected. There was never any bile in the vomitus. The child was nursed every 2 hours. Later the child was fed rectally at the same time. The general condition had become worse during the latter week; intestines functioned irregularly and infrequently.

Physical examination showed a poorly nourished baby, not very emaciated and well proportioned. The head, neck and chest showed nothing abnormal; the epigastrium was distended and marked gastric



CASE VIII. Two hours after bismuth meal.

peristaltic waves were seen. The liver and spleen was not palpated nor was any tumor found at the pylorus. Further examination revealed nothing. On the 26th a small mass was noted in the region of the pylorus. The radiograph showed that during the first hour after feeding no nourishment had passed the pylorus, although during the second hour almost all was found in the intestines. Dr.

A. J. Carlson made an examination for hunger waves, which will be spoken of later. Examination of the blood showed 3,700,000 red cells, 7,300 whites, 80 per cent hemoglobin; urine negative. During the first 24 hours the child lost 3 oz. The temperature was distinctly subnormal, varying between 96.6° F. and 96.7° F. preceding operation. The day of the operation the infant was given an ounce of breast milk rectally which it retained.

The child was operated upon the 27th at 10 A. M. by Dr. Lewis; ether anesthesia by Dr. Herb. Median incision was made in the skin and superficial aponeurosis, commencing at the xyphoid and extending to a few c.m. above the umbilicus. Right rectus muscle was divided. The posterior wall of the stomach and duodenum were cut and clamps applied and sutured with black silk. The stomach and intestines were opened and sutured together with chromicised catgut, continuous suture. All vessels were ligated. The wound was closed in part with silk worm gut and black silk, then closed with collodion and over this gutta serena and dry dressing. On operation, found thickened and firm pylorus. There was a definite dilatation of the stomach. The child vomited $\frac{1}{2}$ oz. dark fluid at night. At 2 A. M. an ounce of breast milk was given rectally, and at 4 A. M. one ounce by mouth, the greater part of which was vomited, as well as $\frac{1}{4}$ oz. water. The child was stimulated with 1/1000 gr. of strychnia every 4 hours; during the first day continuous normal saline enema, 12 drops per minute, was given for an hour before and an hour after nursing. The feeding of an ounce of breast milk by mouth and by rectum was continued. The child retained a moderate amount of the food given by mouth. A large proportion of the nourishment given rectally was rejected. The temperature varied between 98° F. and 102.6° F.

The second of April a stitch abscess was noticed and the sutures were removed. There was gaping of the wound. At this time the white blood count was 7,000. The child died at 10:30 P. M. the 2nd of April. Examination of the abdomen only was permitted. This showed that the tissue at the point of gastro-enterostomy had made no effort to unite and consequently peritonitis had developed.

Case IX. George J., age one month, entered the Presbyterian Hospital November 16, 1916, on the service of Dr. Grulee. Complaint, vomiting and no increase in weight. Two weeks before entering the hospital the child began to vomit slightly; this happened generally immediately after nursing. This regurgitation increased

up to a week before entrance and the vomiting became projectile in type. Sometimes vomiting took place immediately after the baby had been fed, at times 15 minutes after, and on rare occasions an hour after. The vomited material usually contained curds. No fever had been noticed. The stools showed a tendency to constipation. During the few weeks which preceded the entrance to the hospital, the child had had only one stool a day and that only after a glycerin suppository. Some of the stools were green and contained curds. The child slept well and it was noticed that it perspired freely.

During three weeks the child was fed on the breast and then on the bottle, $\frac{1}{3}$ milk and $\frac{2}{3}$ water, with a teaspoonful dextri-maltose added to a bottle of 10 oz.; the child was fed every three hours; it had increased in weight since birth. The mother thought the child was more emaciated than at birth. Birth at term, normal labor; only child; father and mother well. There was evidence of a distinct emaciation as a result of the rapid loss in weight.

Examination—no abnormality was found except that the epigastrium was very prominent and the gastric peristaltic waves could be observed after the child was given water or food by mouth. No tumor was felt. On entrance to the hospital the weight was 7 lbs. 4 oz.; this was the 16th of November. On the morning of the 18th the weight was 6 lbs. 11 oz., a loss of 9 oz. in 48 hours. During this time the child was given a mixture of 8 oz. Eiweiss milch, $\frac{1}{2}$ oz. dextri-maltose, and 4 oz. water, 6 feedings of 2 oz. each every 4 hours. On the 17th this was increased to 12 oz. Eiweiss milch, $\frac{1}{2}$ oz. dextri-maltose, 6 feedings of 2 oz. each. During this time the child vomited almost everything which was given it. The vomiting was often of a projectile type. The child cried a great deal and was very much disturbed. On the morning of the 17th it was given 10 gms. of subcarbonate of bismuth and radiographs were taken at $1\frac{3}{4}$, $2\frac{3}{4}$ and $3\frac{3}{4}$ hours after the bismuth meal. From these pictures one sees that only a very small quantity had passed the pylorus in the first; in the second this was increased, and more in the third; but even after $3\frac{3}{4}$ hours a large quantity of food remained in the stomach, and this in spite of the fact that the child had vomited frequently after having had the bismuth meal. The child continued to vomit and the rapid loss of weight determined us to operate immediately.

Dr. Lewis operated at 10 A. M. on the 18th; posterior gastro-enterostomy was done. Ether anesthesia by Dr. Herb. The child

recovered from the operation with a pulse at 120, respiration 32; the pulse remained high, rising to 180. Immediately after the operation 1/1000 gr. strychnia was given and this was repeated every 4 hours during the afternoon. Continuous normal salt enema was given, which was retained. During the afternoon the child regurgitated a greenish brown liquid and during the night the child ceased to retain the normal salt enema and continued to vomit the brownish green liquid with the traces of mucus. On the 19th, breast milk was given, 1½ oz. every 4 hours. Vomiting continued, but showed no milk curds. The child died at 7 P. M. on the 19th.

Autopsy by Dr. Menne. There were no signs of abnormalities. On examination of the gastro-enterostomy wound it was seen that there was a definite tendency to healing in the peritoneum. The stomach showed, of course, the large pyloric tumor. No other change in the abdominal viscera. It was not permitted to examine other parts of the body.

Case X. Charles W., age 6 weeks, entered the Presbyterian Hospital November 28, 1915, on the service of Dr. Grulee. The complaint consisted of projectile vomiting, loss of weight, and drop



CASE X. One hour and a half after bismuth meal.

in number of stools. At birth the child was very well nourished, 55 cm. long, and fat. It had been nursed at the breast and slept well. It was necessary to urge it to nurse, although it emaciated rapidly. At the end of 17 days it had regained its original weight. At the age of 3 weeks the child began to vomit. From the beginning this vomiting was not projectile. Sometimes there was no vomiting for several nursings. After the first attack the child began to recover. During the first 3 weeks the stools were normal, then it had a tendency to constipation. It was noticed that the vomiting,



CASE X. One hour and thirty-five minutes after bismuth meal.

loss in weight and the constipation were simultaneous. The father and the mother were both well. The mother had had two miscarriages; one other child was well. This child had been nursed, although they had given it supplementary milk mixture. The child had been nursed every four hours since birth.

Physical examination—well nourished, well developed baby in excellent physical condition; rather more apathetic than normal, but this was not marked. The skin was pink and clear, the subcutaneous tissue well preserved. In fact, there was nothing noticed ex-

cept in the epigastrium, where one saw large peristaltic waves in the region of the stomach passing from left to right. X-ray showed that the stomach was large and probably dilated, that no food had passed the stomach during the first hour and that after 7 hours a very great quantity was still present in the stomach. On entrance to the hospital the child weighed 8 lbs. 9. oz. During the first 24 hours, although the child was nursed at the breast, vomiting occurred



CASE X. Two hours and three-quarters after bismuth meal.

after almost every feeding. The use of 1/1000 of a grain of atropine every 4 hours had no influence on this condition. Rectal nourishment, 1 oz. breast milk, was retained apparently with excellent success. During the first 24 hours the weight of the infant rose to 8 lbs. 11½ oz. The morning of the 13th of November the weight dropped to 8 lbs. 6 oz. An operation was advised. At this time the blood showed 5,000,000 reds, 14,900 whites, 90 per cent hemoglobin; urine negative.

Dr. Lewis performed the operation; chloroform anesthesia by Dr. Herb. Median incision above the umbilicus. Posterior gastroenterostomy. Because of the dilation of the stomach the operation

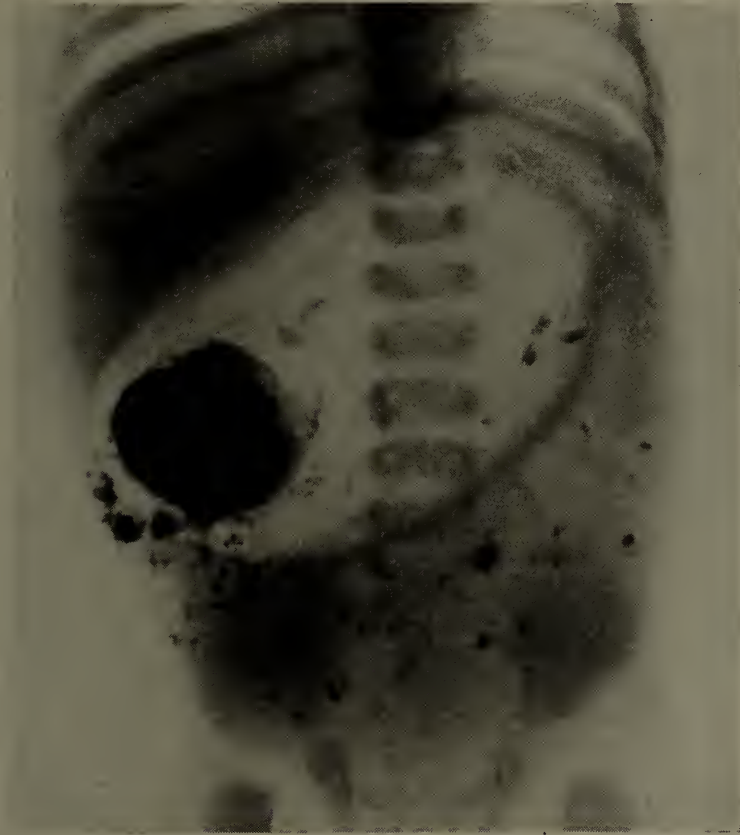
was very difficult; many erosions of the peritoneum were sutured. The pylorus was found very much hypertrophied and of cartilaginous consistency. The child recovered slowly and on the 2nd of December its weight had dropped to 8 lbs. 3½ oz. From then on there was a gradual increase. On the 13th the child weighed 8 lbs. 13½ oz., a gain of 10 ounces in 9 days.



CASE X. Three hours and three-quarters after bismuth meal.

After the operation the child was given hyperdermically 1/1000 of a grain of atropine every 4 hours in order to combat a beginning coryza which had appeared the day of the operation. Happily this did not affect him long and disappeared in a few days. Following the operation the child vomited; the material was greenish and contained a few milk curds. The general condition was sustained by the addition of Ringer's solution rectally and breast milk also by rectum, 1½ oz. being given every 4 hours. Twenty-four hours after operation an ounce of breast milk, then 1½ ounces, were given by mouth. Because of the marked tendency to vomiting, on the first of December the quantity was diminished to ½ oz. by mouth, the rectal administration remaining the same. The quantity of milk

by mouth was gradually increased until the morning of the 7th of December, when we stopped the rectal feeding and gave the baby



CASE X. Seven hours after bismuth meal.



CASE X. Baby W. A. at the age of six months.

3 oz. by mouth. After this the child was nursed by its mother. It made an uneventful recovery and was in excellent condition several months after the operation.

(To be continued)

LATENT TUBERCULOSIS: ITS IMPORTANCE IN MILITARY PREPARATION*

BY EDWARD R. BALDWIN, M. D.

SARANAC LAKE, N. Y.

The choice of this subject seemed to me justified by the important events now transpiring in our country. The responsibility placed upon medical men for wholesale examination of recruits for the war will bring into relief the need for diagnostic skill and sane judgment in the matter of tuberculosis. It is necessary, therefore, that we review our knowledge and apply it with as great definiteness as possible in the light of modern requirements.

To begin the subject I will attempt a definition of the expression, "latent tuberculosis," for the practical purposes intended here. By some the term is restricted to healed or inactive pathologic tubercle, including old calcareous nodules incapable of further harm.

I would first include any and all old or recent tuberculous infections that are capable of producing clinical disease but have never caused recognizable symptoms. Secondly, one may properly include those cases whose symptoms were recognizable but unnoticed and transient and now ceased. If the symptoms were noted they were ascribed to other causes, but the bacilli left anatomic traces as healed nodules or more or less recent stages of tubercle formation.

The enormous frequency of latent tuberculosis in the pathologic sense is well known to you. We all know that careful histologic study shows a remarkable coincidence with the tuberculin reactions at different ages. The names of Naegeli, von Pirquet, Hamburger and Weichselbaum are thoroughly familiar in this connection. You are also aware that the conclusion is accepted that from seventy-five to ninety per cent of young adults have at some time or other been infected, usually in the tracheo-broncheal lymph nodes. Here the bacilli seem to be held up in their travels through the lymph system, whether entering by the upper or lower air passages, and also, as some believe, possibly by the digestive tract.

The microscopic door through which the bacillus enters apparently closes behind it, and the glands first entered, even when irritated, often show no trace in after years of having been the seat of

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tubercles. Hence we literally have—the majority of us—a storage place for the tubercle bacillus, predominantly in the respiratory lymph glands—it may be in the mesenteric—but in either the infection is permanently checked in most persons. These glands may be the real grave of the bacillus, but it must be remembered that living bacilli have been demonstrated in the most calcareous remains of tubercle.

It matters little how the bacilli got there originally, we are chiefly interested in the ultimate fate of these truly latent tubercles. Do they often cause clinical disease? Does an additional infection account for pulmonary tuberculosis in the adult rather than the reactivation of the first? The answer is difficult. Opinions vary as to the probability of successive infections from without, once the bacillus has become seated and formed tubercle. Experimentally it is hard to demonstrate, since recovery from slight infection is less common in the small animals.

In cattle the observation is frequently made that cows carry healed tuberculosis a long time, but when calving fresh disease may develop from the former focus or in some instances proceed from a new source. (Theobald Smith.¹) It is clear from experience that the largest proportion of healed and latent tuberculosis of *small extent* never causes further disease. They even provide some degree of protection—for a time at least—by creating the allergic condition of sensitiveness to tuberculin. So long as this relative immunity lasts we may expect a quicker and more effective reaction to further infection from within or without the body. When the primary infection is of more serious moment or the dose larger, as in family tuberculosis, latency too often means only intermittent delays until some undue exertion, strain or exposure drives the bacilli further into fresh soil until clinical tuberculosis begins its march through the body.

The consensus of opinion today gives little importance to the slight remains of an old infection. It is admitted that under conditions where mechanical injury can cause rupture of such tubercles into neighboring vessels or bronchi, serious disease may result, yet these are rare. Our conclusion must be at present that the only tubercles likely to cause adult disease after long latency are due to infection of larger amount, or greater virulence, or both.

Latent Tuberculosis

Another problem concerning latency in tuberculosis is the presence of the bacilli in the lymph glands without visible or even

microscopic signs of tuberculous changes in the tissue, *i. e.*, bacilli without tubercles. Considerable study has been put upon this matter during the past twelve years. Inoculations of gland tissue from non-tuberculous individuals by Harbitz², Councilman, Mallory and Wright³, Bartel⁴, MacFadyean⁵, Wang* and others give an average of twelve per cent in over three hundred and fifty cases of positive tubercle bacilli in cervical, bronchial and mesenteric glands. Sections of the same glands showed no tubercles. The majority were from children, but it is admittedly difficult to prove with certainty that *no* tissue changes were present.

It nevertheless raises the question of the incubation time of tuberculosis, and the possibility of a long latent period during which the bacillus *rests*—like seeds in a mummy—without reproducing itself. If this latency could be proved, more color would be given to Baumgarten's⁶ persistent belief in inherited bacilli and prolonged latency—a theory quite as certainly unproven. Let us consider evidence that bears on the course of infection:

We can reckon the incubation period of tuberculosis from actual observations that have been made on children who have been regularly tested with tuberculin during exposure to infected surrounding. Thus Hess⁷ watched several children cared for by a tuberculous nurse, and previously negative to the cutaneous tuberculin test. All seven became positive within three months. Hamburger⁸ did the same with an infant and noted the first reaction in thirty-nine days from the date of exposure. Kleinschmidt⁹ observed one after fifty-one days. Experimentally one can show beginning tuberculosis in from six days to three months, according to the dose and virulence. This period is probably true of natural infection. Hence we may reason that latent bacilli are relatively but a short time in a slumbrous state; either they grow and produce tubercles where they may remain alive an indefinite time encysted, or they die and are consumed by the cells. We are compelled to the belief that three principal factors control the fate of the bacilli:

1. The number of bacilli received.
2. The frequency of their entrance.
3. Their virulence.

*Tabulated by Wang, *Lancet*, 1916, Sept. 2, p. 419.

Given the three conditions in suitable proportion we believe no one to be immune to primary infection, at any age and in whatever physical condition. Whether or not disease will follow is another question.*

It is not easy to formulate the conditions that lead to disease, as they seem accidental in so many instances, and no uniform rules apply. The most important problem is perhaps the comparative rarity of serious pulmonary tuberculosis up to the age of fifteen, and the great frequency thereafter, especially during the third decade. It is in relation to this fact that we need to know whether we are dealing with an extension of earlier infections in most instances, or a renewed infection from without the body. We need to know, therefore, to what extent adult tuberculosis is due to multiple infections from without the body, as well as within.

I have had a strong belief that the development of young adult disease was chiefly metastatic, *i. e.*, auto-reinfection, the original infection dating far back to youth or childhood. This seems especially true of family tuberculosis, which so often first shows itself at the same time of life as those with no history of exposure in childhood.

The arguments for recent infection in adults are certainly valid in many cases where only slight pathologic remains of early infection are presumed to have ante-dated the disease. Further, it is contended that the opportunities for infection greatly increase in young adult life with its wider contact with the world at large. I feel that the latter point is debatable, while at the same time we recognize the physical, mental and occupational strains at this period which must make easier the reception as well as the spread of the bacillus.

The personal contact in the home assuredly offers the greatest chance of infection that is traceable, with of course the added danger of bovine sources to a varying degree. Numerous statistical and experimental observations bear on this question of the age of incidence and frequency of infection.

The observation of the incubation period from the time of known exposure to the first evidences of infection, revealed by the tuberculin reactions, is of little value to determine how many times one may be infected from the outside. Attempts have been made from family histories to estimate the incubation period of the dis-

*It should be noted that infection in tuberculosis may not result in disease in the clinical sense.

ease, dating from the death of the parents from tuberculosis until the outbreak of the disease in their children. This would assume no further exposure to infection after the death of the infectious relatives. Falkenberg and Loewenstein¹⁰ concluded from sanatorium histories that the average period of incubation was ten years. It is obvious that in such an examination they might be dealing simply with clinical tuberculosis, the symptoms of which are concealed or unobserved and with longer or shorter intermissions of activity, *i. e.*, clinical latency.

Another interesting way of studying the question is presented by Tillisch¹¹, director of a Swedish sanatorium. He approaches the question from a different standpoint. Among 841 cases of pulmonary tuberculosis, 168, or 20 per cent, were ascribed to family exposure in childhood up to the twelfth year. Clinical tuberculosis was recognized in 107 children who had no opportunity for infection at home, and thus he regards the assumption of outside sources of infection supported. I infer* from this that he argues that abundant chances to meet the bacillus outside the home account for disease in later years.

From the pathologic side we can understand the implantation of tubercle bacilli and ulceration on the surface of the air passages as evidence of tissue reaction at the door of entrance of successive new infections, since this occurs during the course of the open disease. Arguments may be made in support of this as a frequent cause of adult pulmonary tuberculosis.

We know that accidental inoculations of the skin and mucous membranes in adults usually remain localized in these tissues. Whether inhalation tuberculosis in adults begins this way is still a question. The studies of Ghon¹² in children which favor this view cannot be applied unqualifiedly to adult tuberculosis, nor can we accept the theory that new adult infection is favored by previous ones in childhood which, so to speak, prepare the soil. (Orth¹³.) There is, of course, a certain support for this view in the natural history of the disease with its intermissions. On the other hand, the slow development of adult disease step by step involves mechanical factors that tend to spread the disease in the body but do not act in causing fresh invasions from the outside.

*The original article is not accessible to me.

Relation to Military Preparedness

It is very important to interpret wisely the events of the past three years to learn the lesson taught by the war in relation to latent tuberculosis. In one aspect the conflict assumes the character of a huge experiment to disclose the prevalence and importance of latent tuberculosis. Enough has been published already to energize all our forces, both public and private, to prevent so far as possible the unnecessary sacrifice of many young men who have recognizable tuberculosis or a fairly clear history of it. The opportunity now before the Army medical examination boards may be made a blessing by the discovery and rejection of early or unsuspected disease. On the other hand, those who have the so-called "predisposition" and to whom camp life and training would be of vast benefit, ought to be placed under continuous medical observation for future decision as to the duties they can safely perform. Let us take a glimpse of the nations at war and see in what way we can profit thereby.

England, France and Germany have given some account of tuberculosis in their services, but I have no information about the others. Sir William Osler¹⁴, in an address in July, 1916, gave a rather optimistic account of the British Army. During 1915 only 2,770 soldiers were treated for tuberculosis. The proportion of the total enlisted force was not given, but Osler considered it less than the general incidence in the country. He looks for no great increase among the soldiers, as these men would likely have broken down in civil life. Many enlisted with well-marked disease and were passed by the examining physicians. Others concealed their histories to avoid refusal, or made light of symptoms.

In a Welsh hospital during the first six months after its establishment the Medical Officer, Harries¹⁵, received 109 tuberculous soldiers, 51 of whom he classes as having had positive or probable evidence of tuberculosis when enlisted. The same thing occurred in Germany, but to the greatest extent in France, where the disease is far more prevalent in the army.

It is interesting to compare the mortality and invalidity of the armies of the three nations during times of peace. In 1906 the British lost 2.57 per cent from tuberculosis, a decrease of 60 per cent since 1860. Germany, in 1907-08, lost only 1.51 per cent, while France from 1905 to 1909 had an average of 6.8 per cent. (Meissen¹⁶.) The exigencies of the sudden mobilization of reserves

in Germany and France left no time for careful selection and many cases of tuberculosis in a fair state of health were enlisted. Up to March, 1915, the German authorities dismissed 3,500 soldiers for tuberculosis. (Helm¹⁷.) It was also reported that 16 per cent of illness among the troops was due to tuberculosis. The reports for the past two years are not accessible, but the number must have greatly increased as the struggle has advanced.

We have only estimates of the French situation, but it is appalling. In a symposium, "Tuberculosis and the War," in the *Paris Medicale*¹⁸, one writer mentions 30,000 as the probable number. During the Winter, press reports gave figures from 90,000 to 100,000. Very recently (May, 1917) the report of Dr. H. M. Biggs, after an investigation for the Rockefeller Foundation, gives 150,000 already dismissed from the army, but an estimate of the total nearer the truth of 400,000!

Without pursuing figures further there are some important facts already evident in which the British and German reports agree.

1. In the first place, little or no tuberculosis was acquired from infection in the army service. As Osler expresses it, "the germ enlists with the man." There was no particular type of tuberculosis due to the war, as it was merely reactivated.

2. In nearly one-half the cases the history indicated the presence of the disease before entering the service. Presumably a careful examination would have shown its presence. The remainder belong to those whose infection may have been of prior date but previous to enlistment and probably difficult or impossible to discover.

3. Chest wounds were infrequently followed by an outbreak of tuberculosis. An inquiry by Moritz¹⁹ of 190 sanatoria in Germany, Austria and Switzerland, disclosed only 27 cases that very likely could have been aggravated by wounds, while 51 were questionable. In view of the large number of chest wounds the number is considered very unimportant by the author.

4. Wetting and cold were the most frequent causes ascribed for the outbreak. Overstrain and trauma came next, especially severe wounds with large loss of blood.

5. Anti-typhoid vaccination in German soldiers was followed in 46 out of 62 cases observed by Schroeder²⁰ by signs of active tuberculosis. This was doubted as a predisposing cause by other observers, who saw no connection. It cannot be regarded as a specific factor, alone sufficient to activate tuberculosis.

The ultimate history of the war in the light of modern knowledge on tuberculosis should add much more of interest and value. At present one cannot state whether the sub-standard individuals improved in health will not exceed the number whose latent tuberculosis is aroused to activity who otherwise might never develop it. The urgent need for our medical men to meet in the near future is to make as careful selection as possible when the large numbers of recruits are to come up for examination.

It may be asked: What criteria are we to take in order to recognize the clinical latent tuberculous subjects? Are there any practical methods by which we might accomplish it? In the first place, a careful history, if candidly given, is of prime importance. This may involve some difficulties, as in life insurance examinations. It would go far toward excluding the 30 to 50 per cent tuberculous subjects who broke down in the British army. Second, a thorough examination of the chest by the well-known methods, and of the glandular system accessible by palpation.

If these two conditions are faithfully fulfilled many lives may be saved if an opportunity is given to separate all suspected cases for more careful study before acceptance. I know of no short cuts to a diagnosis of concealed tuberculosis. It requires time and often repeated examinations. There are no infallible tests, but several valuable helps. The fluoroscope is one of the quickest if made available. Roentgenograms and, if feasible, stereograms are still more useful, but can hardly be applied on a large scale unless a well organized system is instituted. The tuberculin skin tests are of little value unless the results are repeatedly and persistently negative. The sub-cutaneous test requires much care and experience. Both have no value as positive tests in adults except in confirming other evidence. The serum reaction with complement fixation is attracting more attention as a confirmatory test, and I believe is of greater value than tuberculin. All other refinements of diagnosis in tuberculosis are of such limited value that they can be dismissed with mere mention in this connection. When it is impossible for sanatorium physicians after prolonged observation to confirm or disprove a considerable percentage of suspected cases, the difficulties are at once appreciated when the recruiting problem is contemplated and time is limited. The sifting process must of necessity be coarse unless a thorough-going organization and ample observation facilities are provided. Every possible precaution will doubtless be instituted.

Finally, a question of great importance is the proper supervision of men who may be accepted on probation, if that can be done. Many will break down in civil life who might improve in health and vigor from the military régime and later become more valuable citizens because of it. It were a pity to lose this opportunity, but if it is impracticable, our antituberculosis agencies ought to be engaged in the worthy cause of following up these cases.

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BISMUTH POISONING AND NITRITE POISONING FROM THE USE OF BISMUTH SUBNITRATE, WITH REPORT OF THREE CASES

BY JOHN PHILLIPS, M. B., Assistant Professor of Medicine,
Western Reserve University.

CLEVELAND

Too little attention has been paid by clinicians to poisoning by bismuth itself, or to nitrite poisoning from the use of bismuth subnitrate internally. In this paper I expect to report three cases, exemplifying each of these two types of poisoning. I do not believe that cases of bismuth poisoning are very rare, but that they are frequently incorrectly diagnosed. In an exhaustive review of the literature by Mayer and Baehr* in 1912, they were able to find 65 references to poisoning by bismuth. To these they added reports of three clinical cases of their own. Their review of the literature is so complete that I will briefly summarize the main points brought out in their paper.

As early as 1793 Pott reported cases of bismuth poisoning, probably due to impurities, but little attention was paid to this condition until Kocher in 1903 condemned the use of bismuth subnitrate as a dusting powder to secure healing of granulating wounds, because in six of his own cases toxic symptoms in the form of stomatitis, enteritis, and nephritis resulted. One patient died and the autopsy showed black discoloration of the entire colon.

Two distinct types of intoxication due to bismuth are recognized. (1) That due to bismuth itself and characterized by stomatitis with ulceration of the gums and marked pigmentation of the buccal mucosa. The teeth often become loosened and necrosed, the tongue swollen and ulcerated, there is profuse salivation with very foul breath, and the glands of the neck are acutely inflamed. The appetite is poor, vomiting is nearly always severe and there is a severe diarrhoea with blood, mucus, and pus in the stools. In the later stages of the disease there are often convulsions, with occasionally trismus and nystagmus. Severe anaemia is always present due to the toxic action of bismuth on the red blood cells and also to the hemorrhages from the alimentary tract. Occasionally the red corpuscles show stippling similar to that seen in lead poisoning. Some-

*Leo Mayer and George Baehr, Surg., Gyn. and Obs., 1912: XV: 309.

times a morbilliform eruption is seen over the entire body. The urine shows evidences of an acute toxic nephritis, viz., albumin and the presence of red blood cells and casts. The presence of bismuth in the urine in these cases has been repeatedly demonstrated by various observers. (2) The second type of poisoning is an acute intoxication resembling nitrite poisoning from the internal administration of bismuth subnitrate. The first case was published by Benneke and Hoffmann in 1906. In this case an infant three weeks old was given three or four grammes of bismuth subnitrate in buttermilk, previous to taking an X-ray picture to diagnose a possible pyloric stenosis. Twelve hours later the child became deeply cyanotic and died within three hours; the blood showed methaemaglobinaemia. The same year Sailer, of Philadelphia, reported four peculiar cases of intoxication following the ingestion of bismuth subnitrate. In all there were marked cyanosis, weakness, dyspnoea and nausea. None was fatal. In 1907 Boehme reported a second fatal case, a child, one and a half years old, given a few grammes of bismuth subnitrate by mouth and two days later by rectum. Death occurred three hours after rectal injection. The blood showed methaemaglobin and all the mucous membranes a brownish discoloration. Boehme found that bismuth subnitrate, when mixed with human stools, especially those of children, liberated nitrites rapidly. By injecting a mixture of human stool and bismuth subnitrate into the gut of rabbits, he was able to prove the presence of nitrites in the urine. Similar cases of nitrite poisoning from the use of bismuth subnitrate, have been reported by Prior in an infant, two and one-half weeks old, in which 10 grammes had been given by mouth every two hours, by Novak and Gutig, a fatal case in an adult who was given two ounces by rectum and by Routenberg after 50 grammes by rectum. In all of these cases the symptoms were similar, cyanosis, weakness, dyspnoea, nausea, the blood dark colored, and showing methaemaglobin.

The most important experimental work bearing on the poisoning by bismuth itself is that of Steinfeld and Meyer in 1884. They injected bismuth oxide subcutaneously into frogs, rabbits, cats and dogs. They produced two types of poisoning; first, an acute type characterized by death in a few hours with convulsions, rapid respiration, and slow pulse; second, a chronic type characterized by lassitude, stomatitis, salivation, anorexia, vomiting, diarrhoea, tenesmus (dogs), loss of weight and body heat, albuminuria, and occa-

sionally tetanic contractions. Post-mortem examination showed ulceration and necrosis of the mucous membrane of the large gut. Their explanation of this pathological condition was that the bismuth, circulating in the blood in a soluble form, was precipitated by the hydrogen sulphide in the large intestine, and that the bismuth sulphide produced the necrosis by mechanically blocking the smaller blood and lymph vessels. They proved their theory by giving sufficient bismuth by mouth to absorb all the hydrogen sulphide of the gut, then injecting bismuth intravenously and in such cases there were no evidences of inflammation of the colon.

The following case illustrates poisoning by bismuth itself:

J. S., male, Roumanian, aged 18 years, was referred to the writer October 7, 1915, because of sore mouth. There is nothing in the family or personal history that had any bearing on the present illness. The present illness dated back three months ago when he was injured by running a pitchfork into his left knee. The knee became swollen and red so that it was necessary to open the joint and drain. Because of a persistent sinus following incision a month later this was injected with bismuth paste. This last point in the history we did not obtain until a few days before the patient's death. The sinus closed over, but five weeks ago the patient began to complain of sore mouth, which continued to get worse until he was admitted to the hospital. During the past few days the soreness in his mouth has grown rapidly worse, so that he has been unable to eat anything but milk and soup.

Physical examination showed him to be very pale and thin. His breath has an extremely offensive odor, and there is constantly dribbling from his mouth foul-smelling mucus. The eyes, ears, and nose are normal. His lips are dry, but there are no herpes. Covering entirely the posterior part of the tongue, the posterior third of the hard palate, the uvula, and the gums is a dark gray necrotic mass of tissue, which can be easily removed, leaving a bleeding surface beneath. (See illustrations, Fig. 1 and 2.) The pharynx appears normal. The teeth are in quite good condition. There is some enlargement of the cervical glands. The lungs, heart and abdomen showed nothing abnormal. The extremities are wasted because of great loss of weight. There is considerable swelling of a firm character of the left knee joint but no free fluid. The scar of the old incision is present on the inner side of joint but there is no discharge. The tendon reflexes are active in both upper and lower extremities and no sensory disturbances can be made out.

The urine showed a heavy trace of albumin and some hyaline and granular casts.

The blood examination on admission showed 3,900,000 red blood corpuscles, 30,000 white blood corpuscles and 70 per cent hemoglobin.

At first the case was thought to be one of cancrum oris, as the slough obscured the pigmentation. After about 10 days the slough in the mouth separated, leaving a bleeding surface and then there could be made out very definite pigmentation of the mucous membrane and the line about the teeth as shown in the accompanying drawing. Three days after admission he had three generalized convulsions. One week later he began to have severe diarrhoea, the stools containing a great deal of mucus and some blood. It was then noticed that there was marked pigmentation of the mucosa of the rectum, as shown in the accompanying illustration, Fig. 3. The anaemia steadily increased, so that on October 23, the red blood corpuscles were 1,500,000, hemoglobin 30 per cent, leucocytes 13,000. The stained smear showed no stippling of the red cells and no nucleated red blood cells were seen. The differential count of the white cells showed nothing unusual. The eye grounds were normal. The diagnosis in this case did not occur to me until November 8. An X-ray picture of the knee revealed the presence of a large quantity of bismuth in the knee joint and in the crural bursa. He was transferred to the surgical service, as much of the bismuth as possible was removed and a transfusion of blood performed. The patient grew gradually worse, dying three days later.

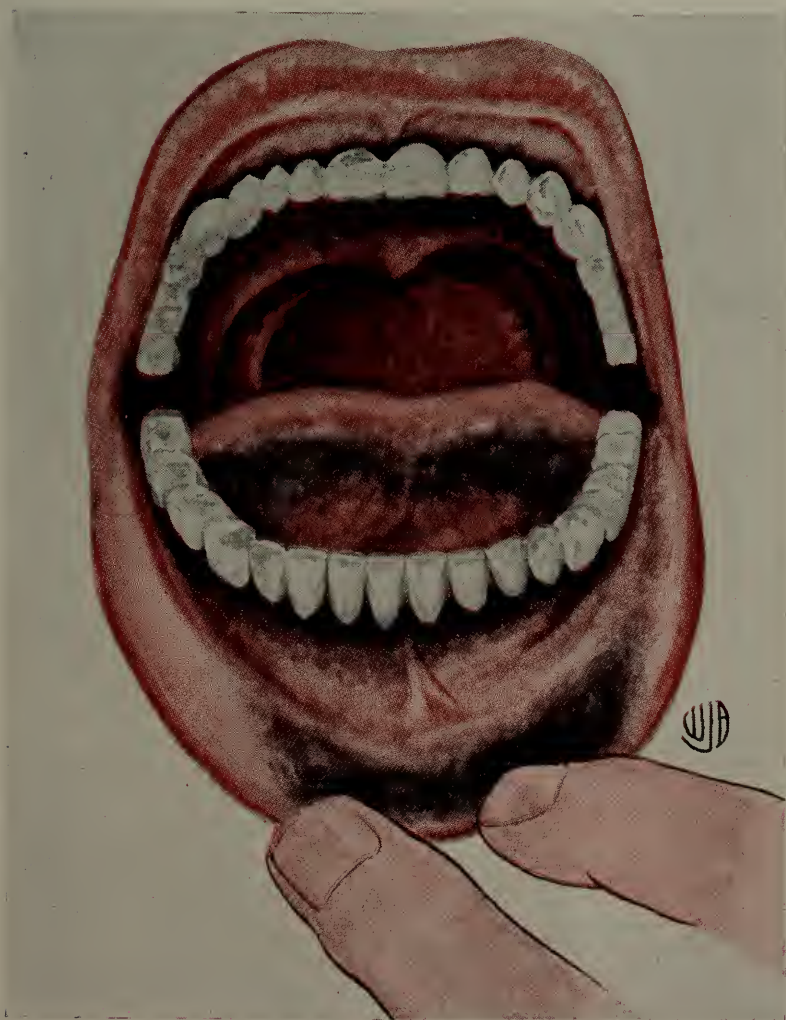
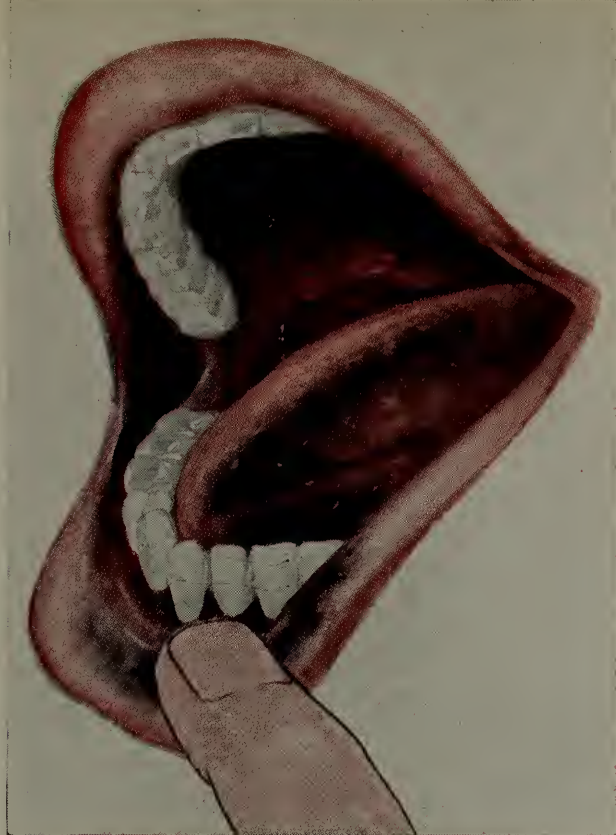
The following are the postmortem findings, the autopsy being done November 11th, 1915, five hours after death. For this report I am indebted to Dr. H. R. Wahl.

Anatomical Diagnosis:

Chronic traumatic arthritis of the left knee joint, with fistula; bismuth stomatitis with blue pigmentation of gums; acute ulcerative toxic (bismuth) ileocolitis; acute parenchymatous nephritis; bronchopneumonia; acute pericarditis; acute and chronic pleurisy; diffuse brown pigmentation of the viscera, especially of the colon; fatty degeneration and cloudy swelling of the liver; acute splenitis; acute degenerative aortitis.

Autopsy Protocol:

Body is that of a poorly developed, very emaciated male, 160 c.m. long. Rigor mortis is present in the upper extremities and



I and II. Illustrations showing pigmentation of the mucous membranes of the mouth.



III. Illustration showing ulceration and pigmentation of the mucosa of the rectum.

lower jaw. There is no livor mortis. The skin is very pale and has a yellowish tint. The head is well formed and scalp covered with sandy hair. There are no depressions, exostoses, or injuries. Eyes: The left pupil is larger than the right. The sclera are pearly and very pale. There is no discharge from the ears, nose or mouth. Mouth: The teeth are in good condition. There is a well-marked blue print at the margins of the gums. The inner surfaces of the lips show a blue line at the point where they come in contact with the base of the teeth. The neck is very thin, but there are no distended veins. The thorax is long and narrow and the soft tissues atrophied. There is resonance throughout. The abdomen is scaphoid and its walls tense. No abnormal masses or organs can be palpated. The genitalia are negative. There are two longitudinal incisions 10 c.m. in length on either side of the knee, containing gauze drains.

Section:

The subcutaneous fat is very scanty and the muscles are unusually pale. The thoracic organs are normal in position and relationships. The pleural cavities are empty. There are a few fibrous adhesions between the left lung and the pericardium. The abdominal organs are normal in position and relationship. The peritoneum is smooth, moist, and glistening. The liver occupies its usual position and is freely movable. The gall bladder is in its normal position, without any adhesions. The intestines are slightly distended and filled with gas and semi-solid fecal material. There are a few adhesions between the appendix and the posterior parietal peritoneum.

Organs:

Brain—The dura is thickened and the vessels of the pia are generally injected. The convolutions in the posterior part of the cerebrum are slightly flattened, due in part to oedema, which is also evident on the base of the brain. Otherwise the organ appears normal.

Heart—Weight, 225 grammes, and measures 11 x 8.5 x 7 c.ms. The epicardium is cloudy and hazy. There are some subepicardial hemorrhages, but very little subepicardial fat. The endocardium is pale and the surface shows yellow streakings. The papillary muscles are small and the chorda tendinae are not shortened. The circumference of the aortic outlet is 6.5 c.m., the mitral 8 c.m., and the valves are thin, clear, and show no thickening, puckering, ulcer-

ation, or scarring. The myocardium is soft, flabby and very pale. Section through the muscles show irregular, yellow markings. The myocardium measures 20 m.m. on the left and 5 m.m. on the right.

Aorta—Shows nothing abnormal except a few diffusely scattered white thickenings in the intima.

Lungs—The left lung weighs 390 grammes. The pleura is smooth, moist, and somewhat hazy. It has a mottled yellow, black and red color. The lung crepitates throughout except for a few nodules varying from 1 c.m. to 4 c.m. in diameter. The latter are hard, cut with difficulty, and from the cut surface purulent material can be expressed. Otherwise the surface of the lung is salmon red in color. A small amount of frothy fluid can be expressed. The bronchi contain a small amount of mucopurulent material. The vessels are normal. The lymph nodes at the hilum are swollen, and anthracotic. The right lung presents the same condition.

Spleen—Weighs 175 grammes, and measures 13 x 10 x 4.5 c.ms. The organ has four distinct notches, is fairly firm and has round edges. It has a slaty green color. The capsule is smooth. The organ cuts readily and the cut surface does not bulge nor scrape off readily. It has a mottled, red and gray color. The Malpighian bodies appear as white elevated nodules. The trabeculae are indistinct.

Liver—Weight 1,750 grammes, and measures 28 x 19 x 8 c.ms. The organ has a reddish brown color and normal elastic consistency. Its edges are sharp. Its capsule is slightly thickened. The lobulation is not very distinct. The cut surface shows nothing unusual. There is no fibrosis. The gall bladder is moderately distended and the biliary passages are patent.

Kidneys—Right kidney weighs 170 grammes, and measures 12 x 8 x 4½ c.ms. The organ is very flabby and pale. The capsule is smooth, strips off easily, leaving a very pale, smooth surface. The cut surface bulges, is very pale, almost a yellowish white. The cortex is 14 m.m. in thickness and is very hazy. The glomeruli are pale and bloodless, and the striae are not recognizable. The medulla is 3 c.ms. wide, is poorly outlined from the cortex, and appears pale and hazy. The pelvis and calyces are normal. The left kidney weighs 270 grammes, measures 14 x 8 x 4½ c.ms. and corresponds with the description of the opposite kidney. The ureters are normal. The bladder is slightly contracted, the walls are thickened and the mucosa is pale.

Adrenals—Each weighs about 6 grammes and shows nothing abnormal.

Pancreas—Weighs 50 grammes and has unusual yellow color. The lobulation is well marked.

Thyroid—Weighs 50 grammes. The cut surface has a translucent, red color and shows distinct lobulation. The bone marrow appears pale, but otherwise normal.

Gastro Intestinal Tract—The oesophagus is normal. The stomach measures 20 x 14 c.m. and shows nothing abnormal. The mucosa shows the usual rugae, but also shows a slight congestion along the greater curvature. The upper intestinal tract is normal. The lower ileum is not unduly distended with gas and fluid contents. The muscular and serous layers are normal, but the mucosa is injected, and shows some irregular blackish streaks and patches and stippling. In the colon the serosa shows nothing noteworthy and the muscularis is normal, but the mucosa is much thickened and has more or less black color throughout. There are numerous deep, sharply outlined, irregular ulcers varying from 1 to 3 c.m. in width, which tend to encircle the gut. Some of these ulcers extend deeply into the submucosa and have a grayish sloughing base. The edges are not indurated.

The appendix is normal.

Microscopical Examination:

Heart—The pericardium is thickened and a small amount of a fibrino purulent exudate lies on its surface. It is infiltrated with many polymorphonuclear leucocytes, some of which extend a short distance into the myocardium. The muscle fibres are swollen and the cross striations are obscure. There is a slight increase in the interstitial tissue in some places. The number of polymorphonuclear leucocytes scattered in the stroma is more than usual. The endocardium is normal.

Aorta—The intima is slightly thickened in some areas, while the architecture of the media is fairly well preserved; the inner half shows swollen and degenerated elastic and muscle fibres, many of which are filled with fine, dark-bluish (calcium dust) granules. Vacuoles are present in many of the muscle fibres.

Lung—The pleura is thickened and in some places is covered with a thin layer of fibrino purulent exudate. In some areas the architecture of the lung appears normal, though there is considerable thickening of the lung framework, and the alveoli are filled with

an inflammatory exudate, consisting mostly of polymorphonuclear leucocytes, endothelial, lymphoid and desquamated epithelial cells, as well as occasional masses of fibrin. In a few areas the lung framework is broken down. These inflammatory foci are poorly outlined, and the bronchi in or about them are filled with polymorphonuclear leucocytes, mucus, desquamated epithelial cells and debris. The vessels are not unusually engorged. There are some foci of fibrosis containing somewhat opaque, brown, extracellular pigment, which does not appear as opaque or coarse as coal pigment.

Spleen—The capsule is thickened. The Malpighian bodies are numerous and normal in size. The pulp shows considerable endothelial hyperplasia and the sinuses are prominent and more or less filled with red blood corpuscles. In the pulp there is considerable intra and extracellular, brown, and reddish brown pigment granules. Many polymorphonuclear leucocytes are present in the pulp.

Liver—The capsule is slightly thickened. The lobules are not distinct and the intra lobular architecture is somewhat disintegrated. The cells are swollen and many contain small vacuoles and more or less abundant, fine, brown pigment. There is no fibrosis. There is considerable diffuse infiltration with polymorphonuclear leucocytes and lymphocytes, especially in the portal spaces. Some of the stellate cells of Kupfer are swollen and contain brown pigment granules.

Pancreas—Shows nothing unusual.

Adrenals—Show nothing unusual.

Kidneys—The capsule is thickened. The endothelial cells of the capillary tufts of the glomeruli are swollen and granular, and little if any blood is present in the tufts. The convoluted tubules are large and irregular, the lining cells are swollen and stain faintly. The cytoplasm is granular and contains many vacuoles, especially towards the lumen, where some of the vacuoles are very large. Some of the epithelial cells are desquamated. The vessels are normal. The interstitial tissue shows some foci of lymphoid cells. There is no blood in the glomeruli and the pelvis of the kidney and the ureters are normal. In the medulla there is some diffuse fibrosis.

Gastro Intestinal Tract:

Stomach—There is considerable mucus, containing desquamated cells and debris lying over the surface. The surface layer of the mucosa is desquamated. Otherwise the wall of the stomach presents the usual appearance.

The small intestine shows nothing unusual except desquamation of the surface epithelium and a large amount of mucus containing desquamated epithelium.

Colon—The serosa shows some fibrous thickening. The muscularis shows slight hypertrophy and the endothelial cells are swollen and prominent. The mucosa shows some deep, ragged ulcers with overhanging edges and necrotic bases extending well into the submucosa, but not into the muscularis. Some of the ulcers are covered with a necrotic slough, while the base is infiltrated with polymorphonuclear leucocytes, a few lymphoid cells, and many endotheloid cells. The capillaries are engorged. Some of the epithelium is desquamated. The portion of many of the glands near the lumen is undergoing a mucoid change and necrosis. In the mucosa especially towards the lumen, there is a variable amount of greenish, brown pigment, some occurring as extracellular granules, but most being intracellular. Most of the pigment appears to be in swollen endothelial cells in the stria, but some is also present in the epithelial cells.

Thyroid—The follicles vary considerably in size. The colloid is abundant and contains scattered, desquamated epithelial cells. Most of the epithelial lining is low cuboidal, but in some areas it tends to be of the low columnar type. Fibrosis occurs in a few foci.

Micro-chemical Reaction:

An attempt was made to ascertain the nature of the brown pigment in the intestine and other organs, to see whether it was bismuth, by means of the HCL—stannous chloride—ammonia hydroxide test for bismuth, applied on frozen sections, in which bismuth gives a black precipitate. A small amount of brown pigment showed in the epithelium colon, but the reaction result showed more strikingly in the kidney, especially in the medullary portion, where the greater part of the pigment was extracellular and mostly deposited in small clumps in the stroma. The result of this reaction, especially with the intestines, is not conclusive, but suggestive.

The following two cases illustrate nitrite poisoning from the use of bismuth subnitrate.

Case 1. Child, four years old, was seen in consultation October, 1912. The day previous to my visit the child had been given a dram of bismuth subnitrate in a starch enema because of colitis. Twelve hours later she became nauseated, was very cyanosed, pulse small and weak and partial coma supervened. This condition continued

throughout the day. The blood was very dark. The colon was irrigated repeatedly and injections of camphor given hypodermically, and within twenty-four hours she was very much better, the cyanosis being less marked. By the third day all the symptoms had disappeared.

Case 2. Man, aged fifty, was seen in consultation one month ago because of stupor and cyanosis. The day previously he had been given an ounce of bismuth subnitrate in milk for an X-ray examination of his stomach. During the night he was nauseated and had a severe chill. Towards morning he became very cyanosed and gradually lapsed into unconsciousness. I saw him in the afternoon. He was deeply cyanosed and his mucous membranes plum colored. His pulse was very weak and the rate was 140. His systolic blood pressure was 80, his diastolic so low that it could not be determined. His blood was very dark. His colon was irrigated several times and a great deal of bismuth returned with the irrigation. He was given stimulation with strophanthus and camphor, and transfusion of blood performed. The next day his cyanosis had lessened and he showed signs of returning consciousness. On the third day he was completely conscious and the cyanosis had disappeared. From that time on his recovery was uneventful.

The above two cases show how important it is to exercise great care in giving bismuth subnitrate internally in the treatment of gastro-intestinal conditions, and emphasizes the fact that it should not be used by roentgenologists for the diagnosis of conditions of the alimentary tract.

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EDITORIAL

THE SALVARSAN QUESTION—YOUR OPPORTUNITY FOR SERVICE

Since the outbreak of the present war physicians have been kept in a state of continual suspense on the salvarsan question. The introduction of this preparation to the profession was heralded

by the maximum amount of publicity, more so than has been accorded any other therapeutic measure in recent years. Much of this publicity was furnished by the medical profession who rightly tested out the efficiency of the new drug in a prompt and thorough manner. The publicity was not confined to the profession, however, for the laity soon learned of this new specific, one dose of which was sufficient to rid the body of spirochetes, according to the original claims. The prompt patenting of the preparation, however, came as a distinct shock to the medical profession. It was quite apparent that the ethical considerations regarding patents on discoveries of a healing nature which should be available to all were not of the same standard in Germany as in this country. We would that this had been the only instance of the peculiar bent which Teutonic Kultur may take! The excuse which was made was that the preparation of the drug was so difficult and so complicated that Ehrlich wished to protect the public from inferior preparations by controlling its manufacture. This we accepted with blind faith.

Then came the war, and one of its minor evils was the difficulty in securing this drug, which we had come to appreciate at its true value as an aid in the treatment of syphilis. While the shortage was embarrassing, it was also enlightening, for we found excellent products, chemically and therapeutically identical, could be prepared in Toronto and in Philadelphia, and that their administration resulted in no more ill effects than were found with the preparation made under the aegis of the German empire. Then we began to ask why the German firm of Farbwerke-Hoechst should still be entitled to a monopoly of the product, so that they are able to hold the penalties of the patent laws as a club over manufacturers in this country or in Canada? It is simply because they are protected by our own patent laws. The question then resolves itself into purely a matter of commercial rights, the necessity for control of the manufacture on the grounds of a reliable article having been exploded. If we Americans are to have a steady supply of this necessary and valuable drug at reasonable prices, there is but one remedy, and that is, the *revocation of the patent*. This is a step which only Congress can take.

We desire to congratulate the representative from this congressional district, the Honorable H. I. Emerson, with having introduced the necessary bill in the House of Representatives. It is known as House Bill No. 4190 and is in the hands of the Committee of Patents. A prompt report to the House is necessary. You can do your bit by writing to this committee at once, explaining briefly the great need for the drug and the necessity for a revocation of German-owned patent rights; and urging prompt action. *Do this now, and send the Journal a copy of the reply you receive.*

DRUGGISTS BAN NARCOTICS IN BABY MEDICINES

The history of narcotics in soothing syrups of various sorts has been an interesting one. Prior to the passage of the Pure Food and Drugs Law in 1906, there was a large number of such remedies on the market under various names which are now almost historical. It was considered perfectly legitimate to put morphine in almost any amount in a soothing syrup, and fatal results were due of course to errors on the part of the person giving the dose. The passage of the law interfered with this to a large extent, and the more recent Harrison Law requiring the listing of narcotics on the label, even in proprietary remedies, has put an additional burden on the producer. There are still a goodly number which have in form arranged themselves to keep on the windy side of the law by stating the amount of the narcotic and keeping this below the legal requirement, but it is clear that the regulation of the dosage by the family when the very name suggests that the effect is soothing is not going to be a very careful one. Correspondence with the producers and a careful perusal of their literature are most instructive. It is not right that father, coming home tired from work and having to go back to the next day's labors in a few hours, should have his sleep disturbed by the cries of the children, nor is it fair to mother that she should be up in the night and then have to rise and cook the breakfast after a sleepless night. To avoid this a dose of the pleasant and harmless syrup should be given whenever needed, and the general condition of the family will be kept up. Little is said of

what happens to baby, but father's sleep is not interrupted. While many manufacturers have changed the contents of the bottle and have given up the narcotics, there are also many who have not, but they have so couched their advertisements on the packages and the labels on the bottles that it is difficult to hold them under the laws, and the advertisements in the newspapers, over which the Food and Drug Law has no control, sing the praises of the poison in a way that would be impossible on the package. It is in such cases that co-operation is essential, and it is of great interest to know that the co-operation of the wholesale and retail druggists has been offered in Cleveland. The Northern Ohio Druggists' Association at a recent meeting has requested the Health Division to prevent the sale of all medicines which are intended for soothing syrups for children if they convey in any way, on label or in package, or even in the trade advertisements, that they are so intended. This is a well defined class of remedies and can easily be kept under local control, and after there have ceased for a time to be any sales over the counter, it will obviously not be to the interest of the producer to advertise locally, so that the demand will soon cease with the lack of newspaper stimulus. The druggists are to be congratulated on their stand in this matter, which is of particular importance in the present necessity for keeping up and improving the health standards of the American people.

ABSTRACTS

ABSTRACTS IN MEDICINE

The Diagnosis and Treatment of the Flagellate Diarrhoeas. Arthur F. Chace and Arthur N. Tasker, *New York J. Am. M. Ass.*, 1917: LXVIII: 21.

Three flagellates are described briefly, the *Cercomonas hominis*, the *Trichomonas intestinalis*, and the *Lamblia intestinalis*. The presence of these organisms in small numbers may cause no symptoms. If the infection is intense, a severe diarrhoea may result. The parasites are said not to produce definite ulceration of the intestine. An accurate diagnosis may be made only by microscopic examination of the feces. The best therapeutic measure is the administration, by mouth and by high enemas, of Merck's medicinal methylene-blue. Sufficient of the drug should be given. The author's custom is to give at least 2 grains every three hours by mouth and to administer at least once and preferably twice a day a high enema, which should be retained 15 minutes, consisting of 500 c.c. of an aqueous solution of the drug, the strength ranging from 1 to 500 up to 1 to 200. In conclusion attention is called to the increasing frequency with which infection of the alimentary tract by protozoal parasites of the other genera in addition to those described in the article is being encountered in the temperate portions of the United States. Amoebic dysentery has been reported from 35 of the States. Cases should not be allowed to progress to the point reached by those described in the article, but no decrease can be expected, say the authors, until the microscopic examination of the stools of all patients giving a history of gastro-intestinal disturbances is as much a matter of routine as the chemical examination of the urine. C. L. C.

The Limits of Bleeding Considered from the Cinical Standpoint. Bertram M. Bernheim, *Am. J. M. Sc.*, 1917: CLIII: 575.

The author considers that since it is now possible for those properly qualified to do transfusions with considerable ease, certainty and safety by any one of several methods, it behooves the profession to learn the indications for the procedure and to become better acquainted with the limit to which bleeding may proceed before transfusion is necessary. He states that each case is a study unto itself, and experience alone is the final great teacher in this as in all other phases of medicine. There are, however, some tentative plans by which one may be guided.

A rapidly falling blood pressure is always a warning sign and air hunger is of true diagnostic import. In severe hemorrhage, no matter what the cause, a good working rule is to transfuse if the blood pressure falls as low as 70 m.m. The blood picture itself was found to be of little avail, some cases who were apparently exsanguinated showing figures apparently within the limit of safety. In discussing accidental blood loss the author gives his opinion regarding the use and abuse of drugs and salt solutions. He feels that all drugs, including strychnin, nitro-glycerin and atropin are of little service, though morphine is useful, since it tends to quiet restlessness. The use of salt solution has distinct bounds. If 1,200 c.c. do not steady a falling blood pressure or cause a slight rise, its use had better be discontinued.

In chronic bleeding, besides replacing the lost blood, transfusion has an added advantage in that the introduction of whole blood tends to stop the seepage which ensues from the deranged condition of the coagulation apparatus. In the new-born, the slightest bleeding should be a signal for transfusion.

Even the chronic anemias, such as pernicious anemia, the author feels, are permitted to progress too far. While fresh blood does not cure these

cases, in general it will cause a remission when all other measures have failed. The same thing is said of the indefinite undiagnosed anemias, some of which are permanently cured by transfusion. C. L. C.

The Pathology of Cardiac Dropsy. Charles Bolton, *Brit. M. J.*, 1917: 2942: 642.

The increased output of lymph giving rise to cardiac dropsy is one of a very definite series of events following the occurrence of failure of the heart in its capacity as a pump.

Stage I. Accumulation of blood in the veins, with a moderate rise of venous and capillary pressure in all parts. Abstraction of blood from the arterial system with a fall of arterial blood-pressure.

Stage II. Dilatation of the veins and capillaries of the central parts of the body with a fall of venous and capillary pressure to normal. This leads to increased congestion of the central parts and anemia of the peripheral parts of the body, in which the venous and capillary pressures fall below normal. Increased output of lymph in the congested area giving rise to dropsy.

Stage III. Vasomotor constriction resulting from anemia of the medulla.

Stage IV. Hydraemic plethora is established and raises the venous and capillary pressures in the central portions of the body to a great height.

Stage V. The ascites and hydrothorax increase in degree and edema spreads in the areolar tissues peripherally, as the congested area encroaches upon the anemic regions.

The abnormal output of lymph leading to dropsy is primarily conditioned by the nutrition state of the capillary wall. In uncompensated heart disease in man the control portions of the trunk are relieved by gravity at the expense of the legs, which become included in the congested area.

R. W. S.

Punctiform Hemorrhages of the Brain in Gas Poisoning. F. W. Mott, *Brit. M. J.*, 1917: 2942: 637.

Punctiform hemorrhages in the brain occur in fatal cases of death from inhalation of poisonous gases, either as a result of their liberation by explosives in confined spaces or as a result of an offensive gas attack by the enemy. In such cases the whole of the white matter is peppered over with small dark spots about the size of a pin's head. These are due to hemorrhages and microscopic examination shows the red blood corpuscles to be broken up and the hemoglobin converted into dark chocolate colored pigment granules which fill the capillaries, arterioles and venules of the white matter of the brain.

The reason why these punctiform hemorrhages occur in the white matter of the brain in gas poisoning is primarily due to the anatomical conditions of the vessels in the white matter, where the arteries are terminal. A tendency to stasis may be brought about in these separate vascular systems by the failure of the heart by those respiratory conditions which lead to right heart dilatation and interference with the return of blood from the skull.

R. W. S.

Heliotherapy in Abdominal Tuberculosis. J. H. Elliot, *Canad. M. Ass. J.*, 1917: VII: 420.

Elliot cites three cases illustrating the benefit he has seen patients derive from sun treatment in Toronto, without the advantages of sanatorium regime. Case 1 showed the value in tuberculous enteritis; case 2 in tuberculosis of the ileo-caecal region; case 3 in tuberculous peritonitis with

ascites. The method he used is as follows: "The patients treated out-of-doors used the Adirondack recliner or similar chair; those treated indoors in winter, a hospital bed of proper height. Treatment was begun with exposure of the feet to the direct sun for ten minute periods twice during the day, once in the morning and once after the rest hour in the afternoon. On the following day the abdomen was similarly exposed, increasing the exposure of the arms and legs by ten minutes each day, that is, by five minutes morning and afternoon. By this method a progressive pigmentation of the skin was secured. Screens may be arranged about the patient to ensure privacy and to break the force of unpleasant winds. When the sun is hot the head is to be shielded from the direct rays of the sun and smoked glasses are used to protect the eyes." Elliot concludes that, "heliotherapy would seem to be a valuable addition to the simple rest cure in the open air: good results can be secured at home and in hospital; the method can be applied in cities which have no special climatic advantages, as demonstrated in a city with 48 per cent possible sunshine." H. S. F.

New Aspects of the Significance of Appetite and Appetite Juice in Practical Medicine. A. J. Carlson, *Interstate M. J.*, 1917: XXIV: 448.

Carlson summarizes the recent observations he and others have made on the secretion of gastric juice. Carlson's diner, who has a permanent gastric fistula, has made possible extensive studies on the human, which Pavlov and his school made on dogs. Pavlov taught that appetite juice is the all-important factor in the initiation of digestion, while Carlson shows that in the normal man this plays a minor role. This is so because of the constant production of gastric juice in the fasting stomach—therefore, the stomach is potentially active in its digestive function during fasting. It would appear that hunger is an indication of a proper condition of the alimentary tract to handle the food in the way of motility and secretion, and that this is the chief biological significance of appetite. The production of appetite gastric juice is of secondary importance and of practical value only in cases of extreme impairment of gastric secretion.

H. S. F.

ABSTRACTS IN SURGERY

Post-Operative Tympanites. John D. Malcolm, *Brit. M. J.*, 1917: I: 612.

Keith, in 1915, described a neuro-muscular tissue specialized from Auerbach's plexus and situated where delays in the passage of the bowel contents normally takes place. He regarded this tissue as similar in nature and function to the nodal and conducting system of the heart, being the regulator of peristaltic activity in the part of the intestine immediately beyond it. A want of co-ordination between the muscular activity of the various parts may give rise to effects comparable to those of heart-block, resulting in intestinal stasis.

Malcolm attributes some post-operative cases of tympanites to enfeebled peristaltic action, especially of the large bowel, and recommends the insertion of a Paul's tube into the distended portion and the formation of a temporary fistula. His mortality rate was 3.8 per cent in twelve cases.

C. H. L.

Studies in the Physiology and Pathology of the Stomach After Gastro-Enterostomy. A. O. Wilensky and B. B. Crohn, *Am. J. M. Sc.*, 1917: CLIII: 808.

The methods used were chemic, radiographic, and a study of contractions of the stomach muscle by the balloon method of Carlson.

The results show that in the great majority of cases the operation leaves the stomach impaired as to its secretory function, its peristolic tone, and the nervous mechanism controlling both. The best results are obtained where some pathological process had gradually caused a stenosis of the pylorus. The authors plead with the surgeon, sedulously to avoid a "concession operation," *i. e.*, a gastro-enterostomy without demonstrable organic lesion.

Most interesting are the tracings of stomach muscle contractions by the balloon method. The normal stomach shows slow tonal contractions, and the stronger and more rapid hunger contractions. The latter are an indication of freedom from organic disease. Cases of gastric neurosis of some types, and vagotonia, show markedly increased tonic and hunger contractions. Atonic and prolapsed stomach show diminished tonal waves and often absent hunger contractions. In only one of a series of gastric or duodenal ulcer were hunger contractions seen. The tonal waves were retained.

After operation almost all cases, examined within one month, show a complete loss of peristaltic function. In the cases that were clinically cured three out of seven showed relatively early good tonal and hunger contractions. In the functional cases, which were not cured, of eight cases traced, four showed poor or no tonal contractions and none showed the vigorous hunger contractions. In the group of cases characterized by organic stenosis of the gastro-jejuno-stoma, of four cases traced, two retained good, and two fair tonal waves. Hunger contractions were absent.

C. H. L.

Respiratory Suction an Aid in Surgical Shock. W. T. Porter, *Boston M. & S. J.*, 1917: CLXXVI: 699.

The low diastolic blood pressure of shock may be raised by lowering the head and chest, thus draining the blood out of the abdominal veins into the brain and heart. But gravity is slow. Adrenalin and saline injections tend to fill the heart; one by narrowing the arterial outlets, the other by adding to the volume of the blood. Neither directly brings back the blood from the congested veins.

Porter's remedy is based on the fact that when the diaphragm descends in respiration, the cavity of the thorax is enlarged, the negative pressure is increased, air is sucked into the lungs, and blood from veins is sucked into the heart. In man this suction may balance a column of mercury 30 millimeters high, equal to a column of blood 15 inches high—a value one-third the total normal diastolic arterial pressure.

Powerful and frequent contractions of the diaphragm may be brought about by increasing the carbon dioxide content of the inspired air. This is easily done by causing the patient to rebreathe from an inflated rubber bathing cap. When oxygen hunger approaches, the cap is removed. Porter has experimented with this method in animals with good results; he now is on his way to France to make observations upon the wounded. C. H. L.

Recent Developments in Camp Sanitation. Lt. Col. W. F. Lewis and Maj. R. B. Miller, *The Mil. Surgeon*, 1917: XL: 199.

The standard type of kitchen and mess hall has proven satisfactory. Kitchen table tops are made of five boards of 2 x 6 in. The second and fourth boards are left unnailed, and when removed all surfaces can be easily washed. Mess tables are made of 1 x 12 in. lumber, two boards wide.

There is urgent need for an icebox suitable for field use. Waste water is collected in receptacles. Pits are forbidden.

Meat is delivered to the organization from the storehouse by a motor truck fitted with parallel bars from which can be suspended 56 quarters of beef. An entirely satisfactory incinerator has not been developed. Several

types were used on the Mexican border. The Guthrie and Rock pit kitchen incinerators are described and illustrated. A modification of the field range—a pit 12 to 18 in. deep and filled with stones not less than 4 in. in diameter made under the firebox is recommended as an incinerator, so that one fire may do for both purposes as far as possible. No pits are allowed to dispose of waste water at spigots, and precautions are taken that drippings do not cause a pool. Washing hands, cleaning teeth, and rinsing utensils under the spigots are prohibited.

Waste water from washing hands and faces may be scattered in the sun. Usually drainage from bathhouses is ample and a place is provided there for washing clothes. The benches should be moved every two or three days.

Bathhouses in the summer were open sheds, but in the cold weather were reconstructed and provided with heat. A boiler designed by Maj. Saville was used and is illustrated in the article. It consisted of adobe cover surrounding a boiler which connected below with a coil of pipes inside a long brick chamber, square on cross section, at one end of which is the chimney and at the other the fire. The drainage was collected in large pits which were pumped out when necessary.

The burning out of latrine pits was superseded by using a mixture of one pound of bone black in three gallons of crude oil. This was first sprayed on the inside of the latrine box and pit. One and one-half gallons are sprinkled over the contents of the pit every day and applied to the sides of the pit and box once in ten days.

Manure is burned in railroad-iron incinerators, each one disposing of twenty-five to fifty loads a day.

The rubbish dump is kept covered by ashes so that the only exposed rubbish is along the advancing margin of the pile.

Attention was given to tent ventilation because of the frequency of pneumonia. A hood was devised and ordered on the tops of the tents, four inches above the canvas.

The authors suggest general obligatory orders for the best sanitary procedures for field use.

A. S.

Tuberculosis of the Spine: End-results of Operative Treatment. M. S. Henderson, M. D., *Surg., Gynec. & Obst.*, 1917: XXIV: 600.

The report is based on the condition of 81 patients operated on by the Albee or Hibbs method. The purpose of each is to place a bony living brace to the spine and thus shorten the period of recumbency, cast and brace wearing. Patients submitted to these procedures should be in good general condition. Paraplegia per se is not a contra-indication. Grafts in children gradually absorb. Osteoplastic operations show the same results. Adults who have bony ankylosis are not benefited by operation. Preferably the operation should be performed before deformity appears. When necessary to fracture the graft to make it conform to the kyphos, the chance of failure is increased. Two such methods are illustrated by diagrams. After operation, rest on a gas-pipe frame or stiff bed for one month is essential. A brace should be fitted for the ambulatory period and for one year after all active signs of the disease have disappeared.

There were 74 Albee operations, seven after the method of Hibbs. The average age was 25. Only seven were under 12 years. Location—34 lumbar, 36 dorsal, 11 dorsolumbar. Duration of symptoms two years to six months. The average returned to work from one to one and one-half years after operation. Thirty-one patients (42.4%) are cured. Thirty-three patients (45.2%) are relieved. Seven patients died later. Two of these had had healed spines. Four of the remaining five should not have been subjected to operation.

A. S.

ABSTRACTS IN NEUROLOGY

A Case of Brown Sequard Paralysis. Lewis J. Pollack, *J. Am. M. Ass.*, 1917: LXVIII: 1609.

The author reviews the literature regarding the various sensory tracts of the cord. Brown Sequard's conclusions, that impressions of pain and temperature ascend in the grey matter, while those of touch and sense of position, ascend in the dorsal columns, have been found to be at least partially incorrect by Petren, Head, Thompson and Holmes.

The consensus of opinion at present is as follows: Pain and temperature sensations pass in or near the opposite lateral columns and muscle sense in the homolateral dorsal column and lateral cerebellar bundle. The latter are placed medial to the fibers for pain and temperature and lateral to the crossed pyramidal tract. The impressions for touch ascend in the hemolateral posterior columns and in the crossed lateral columns along with pain and temperature. Appreciation of weight, recognition of size and shape, and the sense of vibration pass up in the uncrossed dorsal columns. T. S. K.

On the Crystalline Compound Containing Iodin Which Occurs in the Thyroid. E. C. Kendall, *Endocrinology*, 1917: I: 153.

By an alkaline alcoholic hydrolysis the thyroid proteins are broken into many simpler constituents, which by their solubility in acids are separated into two groups. Those constituents insoluble in acid are designated group A, and those soluble group B. No definite crystalline compound has been isolated from group B, but it appears to be composed of mixtures of amino-acid complexes. About one-half the total iodine in the thyroid proteins appears among the group B constituents. The nucleus to which the iodine is attached is unknown.

By continued hydrolysis the group A compounds have been further separated and the iodine-containing compound has been isolated in pure crystalline form, having a constant iodine content of 60 per cent.

Physiologic tests on animals and human beings have shown that no toxic effects can be produced by any of the constituents of group B. Group A constituents, however, produce the so-called hyperthyroid symptoms; increase in pulse rate, with tachycardia, increase in nitrogen elimination with loss of weight, increase in nervous irritability, etc. Further investigation showed that the production of these symptoms was proportional to the iodine content, that partial purification of A did not destroy the activity, and finally that the compound containing A-iodine produced these effects in all stages of purity up to and including the pure crystalline form.

The amount of A-iodine compound necessary to produce symptoms is extremely small. One-half milligram ($1/120$ of a grain) per day produced marked effects in a cretin weighing 15 kilos. The susceptibility of animals and man to this compound varies greatly, but the human being responds much quicker and to a far greater degree than the dog. Some form of tolerance for the compound is produced. In very small doses the A-iodine compound exerts a tonic effect, and appears to be essential for normal growth and life.

Administration of A-iodine to man produces changes in the cardiogram.

Although B produces no toxic effects, it appears to possess physiological properties in certain conditions of the skin.

The toxic properties of A are due to the isolated iodine-containing compound; and there appears to be no relation between activity and iodine in it.

T. S. K.

Variations in the Sensory Threshold for Faradic Stimulation in Psychopathic Subjects. The Alcoholic Group. G. P. Grabfield, *J. Nerv. & Ment. Dis.*, 1917: XLV: 410.

The studies of the electrical excitability of the nervous system in various diseases, undertaken by the author, seems to offer an opportunity of acquiring some insight into certain factors of various neuroses. Especially interesting is the fact that fatigue in normal individuals definitely varied the threshold of stimulation.

From the study of alcoholics, the author gives the following conclusions: The alcoholic psychosis shows a pathologically high sensory threshold for faradism for varying periods after the withdrawal of the alcohol. Acute alcoholic excesses do not appear to raise the threshold to a pathological value. The thresholds of cases having other psychosis complicated by chronic alcoholism often show that alcohol raises the threshold above the general level of the group to which such a case belongs.

In convalescence from the alcoholic psychoses the threshold falls, reaching a normal value if recovery takes place. This fall appears to follow a smooth curve in the delirium tremens and acute hallucinosis cases and shows irregular variation in the protracted Korsahoff cases. In cases of other psychoses complicated by chronic alcoholism the threshold falls to the level of the other cases in the group to which the particular case belongs, after the withdrawal of the alcohol.

This test appears to have practical value in gauging the rapidity and time of recovery in the alcoholic psychoses. T. S. K.

ABSTRACTS IN PEDIATRICS AND CONTAGIOUS DISEASES

Perleche: Its Bacteriology, Symptoms and Treatment in Two Hundred and Twenty-three Cases. Arthur L. Smith, *Arch. Pediat.*, 1917: XXXIV: 274-277.

The author defines perleche as an infection of the labial commissures, manifesting itself, first by a maceration of the epithelium, secondly by a desquamation of this tissue, and thirdly by a formation of shallow ulcers and cracks. In his series of 223 cases he isolated an anerobic streptococcus in 135 cases. Twenty-six times there was an associated staphylococcus pyogenes aureus. Seven times with staphylococcus albus and fourteen times it was associated with streptococcus pyogenes. In the late stages of the disease the streptococcus was not found.

The author believes the principal predisposing cause of perleche to be an increased flow of saliva which in turn is the result of an abnormal condition of the nasal or oral cavity.

The treatment which has given the author the best results has been the correction of abnormal conditions of the mouth which cause the hypersecretion of saliva and treating the local condition with a 50 per cent solution of silver nitrate after which Lassar's zinc oxide paste is applied. H. O. R.

The Therapeutic Value of Pertussis Vaccine in Whooping Cough. Anna I. von Scholly, Julius Blum and Luella Smith, *J. Am. M. Ass.*, 1917: LXVIII: 1451-1456.

The authors draw attention to the danger of hasty conclusions without making a critical comparison with control cases. Their statistics show that with a non-specific influenza vaccine one group of cases showed very little difference in the duration of the paroxysmal stage of the disease from those treated by pertussis vaccine. In a second group of cases the non-specific vaccine shortened the average length of the paroxysmal stage by eight days

while in a third group it acted less well, on the whole, than the specific vaccine in the mild cases, and better than the specific vaccine in the moderate and severe cases.

The authors found that of all the cases, the shortest course was run in their non-vaccinated controls and those receiving inert, milk-colored water.

They concluded that more observations and more critical observations with controls for comparison must be made before the case can be made out for the curative and prophylactic value of a specific pertussis vaccine.

H. O. R.

Hypertrophic Stenosis in Infants. L. Emmett Holt, *J. Am. M. Ass.*, 1917: LXVIII: 1517-1524.

The article is based on observations of the author especially during the past 16 years. He arrives at the conclusion that since the Rammstedt operation has been used, any case of stenosis which does poorly on medical treatment after two to three weeks' trial, or a shorter time if the case is severe, should be treated surgically. The infant recovers its normal state of nutrition much faster after this operation than if dragged along on medical care alone. The operation consists of dividing the circular muscular layer of the pylorus by external incision. The operation consumes but 15 minutes, which is one of its most desirable features. Holt calls attention to the high mortality when the former surgical methods of gastroenterostomy were employed and the comparatively low mortality of the Rammstedt operation. He also emphasizes that even with this latter method the success is dependent in no small degree on the post operative care as to feeding, handling and body temperature.

C. W. W.

Pertussis Vaccine. Paul Luttinger, *J. Am. M. Ass.*, 1917: LXVIII: 1461-1464.

This article is a summary of results obtained by the New York Health Department and 180 private physicians and health officers. These results are based on a study of 3,356 cases of whooping cough. A stock vaccine of the Bordet-Gengou bacillus was furnished by the Health Department. No less than three subcutaneous injections were given, at intervals of forty-eight hours, beginning with five hundred million and working up to two billion; the severity of the case and the improvement governed further dosage. The results justify the vaccine treatment both as to its prophylactic and curative action. The first and second week of the paroxysmal stage was found the best time for beginning the injections. The disease is materially reduced in duration and severity.

C. W. W.

On Fragilitas Ossium and its Association with Blue Sclerotics and Otosclerosis. E. Bronson, *Edinb. M. J.*, 1917: XVIII: 4-240.

The author gives a description of two families with hereditary fragility of the bones associated with grey-blue sclerotics, and in the first family with otosclerosis also. A summary of the literature with reference to the presence of these peculiarities in relation to the disease in question and a complete bibliography are presented.

In the first family, consisting of fifty-five individuals in four generations, twenty-one had gray-blue sclerotics. Of these individuals with the gray-blue sclerotics only one, a six-year old boy, who survived infancy, has had no fractures. The number of fractures in any case is not excessive and considerable force is required for their production. The majority of the adults are in good health and do ordinary work. The mortality among infants with gray-blue sclerotics is in this family greater than among those not affected. The heads of the individuals who have gray-blue sclerotics

and bone fragility show an abnormal prominence of the frontal and occipital bones. In two of them the anterior fontanelle remained open throughout life. Of eight adults with gray-blue sclerotics and fractures, seven had varying degrees of deafness, the eighth dying at the age of twenty-three without signs of deafness. The second family consists of eight individuals in three generations. Seven have blue sclerotics and of these four have had fractures and two others a tendency to sprains. All these individuals are able to lead an ordinary life except one child, who is somewhat crippled and incurs fractures too easily to run and play. In this family the head has the characteristic shape frequently seen in Osteogenesis Imperfecta Congenita, namely, an increase in the bitemporal diameter, so that the ears are turned outward and downward, slight downward tilting of the axis of the eyes, and an underhung lower jaw. There is no tendency to deafness. All individuals in both families, except three in the first family, are below the average in stature. The incidence of gray-blue sclerotics with fragility of the bones was first described by Eddowes in 1900. Twenty years before, while in general practice, he had as a patient a boy with ten fractures who showed the deepest blue sclerotics he had ever seen. Hence when a girl with blue sclerotics came to him for examination of the eyes, he asked her if she had broken any bones and found that she and her father, who also had blue sclerotics, had had numerous fractures.

H. C. K.

ABSTRACTS IN GYNECOLOGY AND OBSTETRICS

The Treatment of Septic Incomplete Abortion. Hiram N. Vineberg and Sol. Wiener, *Am. J. Obst.*, 1917: LXXV: 975.

Winter, of Koenigsberg, in 1911, became dissatisfied with the results of the active treatment of septic abortion. Finding the mortality ranged from 10% to 23% in various clinics, he decided that all cases showing haemolytic streptococci in the uterine discharge should receive expectant treatment only until the temperature had returned to normal. Then, and not till then, the uterus might be emptied. The only exception he made to this rule was in cases of severe hemorrhage. Heads of other German clinics refused to accept this view, though their results with the active treatment of septic abortions were no better than Winter's had been.

Winter's position is founded upon the value he attaches to finding haemolytic streptococci in the uterine discharge. This seems an unsafe ground to build upon, as it gives poor criteria for prognosis. Clinical data are of more value than the microscopic identification of a coccus.

Two hundred and eighty-seven cases of abortion were admitted to Mt. Sinai Hospital, New York, in five years. Sixty of these had fever ranging from 101° to 105°. All these septic cases had received some sort of intra-uterine manipulation before their admission. Cultures were not made, as they were deemed unnecessary. These septic uteri were emptied as soon as possible after admission. As the death rate in this series was only two cases, the authors are satisfied with their results, and do not accept the view of Winter that active treatment of these cases is wrong.

Gauze packing is never used to empty the uterus. The cervix is dilated, and the cavity emptied with curette, finger, and placenta forceps. If the pregnancy has advanced beyond the tenth week, a vaginal hysterotomy may be advisable.

J. T. S., Jr.

Hyperplasia of the Endometrium. Emil Novak, *Am. J. Obst.*, 1917: LXXV: 996.

Uterine bleeding is frequently caused by a disturbance of the menstrual mechanism, being due to perverted ovarian function, and not to a pathological endometrium. Many glandular and interstitial endometrial changes are now known to be normal at certain stages of the menstrual cycle.

Except in tumor formations, hyperplasia of the endometrium is the only pathological finding that may truly be called "pathognomonic" of clinical symptoms.

Cullen first called attention to this condition, which manifests itself in uterine bleeding. The histological picture is one of thickened mucosa, with many dilated gland spaces. These are not due to cyst formation from occlusion. The stroma is rich in cells. With such a picture, free bleeding may be postulated. Wm. H. Welch, in 1913, named the condition "hyperplasia of the endometrium." It is most common between the ages of 35 and 45 years, but may occur in girls. This condition has recently (1915) been rediscovered by Schroeder. This writer suggests that the condition is caused by a disturbance of the menstrual mechanism. The follicles may not rupture, so that there is no corpus luteum formation. We now believe the corpus luteum hormone is necessary for the endometrial changes before menstruation, so these changes are abnormal in these cases. The development of the endometrium stops at the end of the proliferative stage. However, the picture of the proliferative stage is not identical with that seen in these cases. In normal cases there is more tortuosity of the glands, less cyst-like formation, etc. More work is needed upon the problem.

J. T. S., Jr.

Mother Welfare in Pregnancy. J. W. Ballantyne, *Edinb. M. J.*, 1917: XVIII: 348.

"Prevention" is the watchword of modern medicine, yet we neglect efforts to keep a pregnant woman in good health. Then when her child is born, our hands are tied by the great influence of its antenatal life, and our efforts for it become palliative, not preventive. We need adequate knowledge of antenatal, anatomy, physiology, pathology, and pharmacology. All are largely lacking.

We know something of the gross anatomy of pregnancy, but little of its histology. Our study of such a problem as eclampsia would be greatly facilitated if we had accurate knowledge of the normal histology. Our lack of knowledge of the normal anatomy and histology of the foetus is abysmal. In the field of physiology of pregnancy, our ignorance is even greater. For example, is the placenta a transmitting, a sifting, a detaining, a digesting, a secreting, or an excreting organ? The same lack of knowledge meets us in other fields.

In spite of such vast ignorance, the obstetrician must do the best he can with the little he has. It is difficult to make pregnant women apply for help, as they do not consider themselves ill. Compulsory notification of pregnancy would probably not be wise. Care of a physician and financial maternity benefits are more needed in pregnancy than in the puerperium.

The administrative machinery comprises, first, maternity centers or antenatal clinics, where an obstetrician and a nurse make examinations and give advice. The work here is purely preventive. Next comes the dispensaries. Here are referred those cases who develop minor ailments in pregnancy. Finally we have the maternity hospitals. Here are sent all patients who give indication of having abnormal or difficult labor. Here they are thoroughly examined in a pre-maternity department.

The hospital needs a good pathologist, and every placenta should be thoroughly studied.

So-called "prenatal nurses" should bind the whole system together by keeping in touch with the expectant mothers in their homes.

The question whether the obstetrician should turn over the feeding of the baby to the pediatrician at birth, or wait till it is weaned, is not important. The essential thing is that the feeding be watched, not that some special kind of doctor does the watching.

J. T. S., Jr.

ABSTRACTS OF OPHTHALMOLOGY

Eskimo Snow-Blindness and Goggles. Judson Daland, M. D., Phila., *Ophth. Rec.*, 1917: XXVI: 116.

The ocular regions of the Eskimo resemble those of the Chinese. The palpebral fissure is narrow and sometimes slightly oblique. Many of the Eskimo hunters possess remarkable visual acuity, recognizing distant objects ordinarily requiring the aid of a field glass.

Snow-blindness is one of the common eye diseases among the Eskimos. It has been asserted that the Eskimos possess a relative immunity from snow-blindness, but the author's observations convince him they were as susceptible as Caucasians. Experience has taught the Eskimos the necessity for protecting the eyes from the sun's rays, and they know that one attack of snow-blindness predisposes to another. They also recognize the necessity for wearing goggles on cloudy or dull days, as snow-blindness occurs then as well as on sunny days.

The patients complain of defective vision and sensitiveness to light. The pupils are contracted, and they react sluggishly to light. Conjunctivitis and snow-blindness are usually associated.

Each Eskimo makes his own goggles. Wood is the material employed, since ivory and metals are not practical for an arctic winter temperature. The goggles fit accurately the orbital regions, excluding all light excepting that entering two narrow horizontal slits placed directly in front of the horizontal meridian of the eye. Some of the goggles are modified by a ledge projecting directly over the horizontal slit for a quarter of an inch. The inner surface of the slits is usually blackened. A vertical slit bisecting the horizontal ones is employed in the goggles of the Siberian Eskimos for the purpose of increasing the range of vision. The goggles are retained in place by means of reindeer sinew.

Snow-blindness in a bear has been observed, and it is probable that other animals are likewise affected.

The author quotes the opinion of Parsons, that the ultra violet ray produces conjunctivitis in snow-blindness.

R. B. M.

Open Spectacles or Closed Goggles as a Protection Against Snow-Blindness. S. Holth, M. D., *Ophthalmoscope*, 1915: XIII: 71.

In the Amundsen expedition to the South Pole, those who wore leather goggles after the pattern of Dr. Frederick Cook, and those who wore the Eskimo type of goggles, were more or less troubled with photophobia and lachrymation. Mr. Amundsen and Mr. Hansen wore constantly common pairs of spectacles with mussel-shaped Euphos glass, the bridge and temples being wound with woolen thread, and experienced no inconvenience from sun glare and snow, and had not the slightest symptom of photophobia or lachrymation. A more severe test can scarcely be conceived: sun for twenty-four hours a day, snow round all the horizon, and heights up to 10,000 feet above the sea. In these heights, the ultra-violet rays are much more numerous than on the sea level. All more or less hermetical arrangements of goggles for the exclusion of side lights are superfluous, and serve only to moisten the glasses.

In the Norwegian ski expedition in Spitzbergen in 1912, Dr. Boeckman wore Euphos glasses in open frames, and had no trouble with his eyes, while most of the members wore their Euphos glasses in closed goggles with metal wire mask with a velvet-lined border. These men did not suffer from snow-blindness, but the skin of the eyelids was soaked with perspiration, and conjunctivitis occurred.

R. B. M.

Aviators' Dazzling. T. B. Holloway, M. D., *Ophth. Rec.*, 1917: XXVI: 208.

A naval lieutenant, while on duty at an aviation station, suffered ocular discomfort, burning of the lids, and injection of the conjunctiva. There was an associated poor ocular endurance for close work. Following a rest, he resumed his duties at the aviation station, and with the use of tinted lenses, he was quite comfortable.

Numerous cases of the effects of glare have been reported from the German army, not only in the aviation corps, but especially among the anti-aircraft gun crews. In these cases, the wearing of Euphos glass was recommended. R. B. M.

ABSTRACTS IN LARYNGOLOGY, RHINOLOGY AND OTOTOLOGY

Notes on the Treatment of Hay Fever. William Scheppegegrall, *Interstate M. J.*, 1917: XXIV: 488-494.

In pollen therapy it is essential to select the pollen to which the patient is sensitive and to which he is exposed. There is no benefit to be derived from the injection of pollen extracts to which the patient is not sensitized and furthermore it is not definitely established that new sensitization may not be developed from such injections.

Pollen causing hay fever are divided into four groups as follows: 1, The ragweeds (Ambrosiaceae), 2, grasses (Graminaceae), 3, wormwood (Artemisias), and, 4, chenopodiums (Chenopodiaceae).

The first group includes several varieties of rag weed, marsh elder, and cockle burs. Golden rod and several other members of the compositae family resemble this group, but are not wind-pollinated, so cannot cause hay fever except by direct inhalation.

The second group includes nearly all members of the grass family, including rye, wheat and corn. It is the pollen from this group which is concerned in the production of the spring type of hay fever.

The pollen of the third group is very active, and is a factor in the hay fever in the Pacific and Rocky Mountain States. The fourth group is of minor importance.

If a patient is found sensitive to the pollen of any member of a group, he will react to all members of that group. This is of practical importance, for it is unnecessary to use combined pollens of any particular group.

To determine the susceptibility of the patient to various pollens the nasal, conjunctival and skin tests are used. The skin test is the most practicable. The pollen extract may be applied to the scarified skin, or injected into the skin.

Pollen therapy should be begun six or eight weeks prior to the expected attack. To those patients who are not in a position to take pollen treatment, calcium chloride in fifteen (15) grain doses three times a day, seems to afford some relief. This also should be begun six or eight weeks previous to the hay fever season. The use of autogenous vaccines obtained from the nasal and nasopharyngeal secretions has given good results in patients who have not responded to pollen therapy or have not received it. C. E. P.

The Influence of Position on the Appearance of the Normal Pharynx.

J. Laryngol., Lond., 1917: XXXI: 479.

In the above journal Guthrie writes as follows: "Some years ago, whilst examining the throat of a bedridden patient, I noticed a swelling on the right side of the posterior pharyngeal wall, the appearance, in fact, strongly suggesting that of a retro-pharyngeal abscess.

"The patient's head was, at the time, acutely turned towards me as I stood to the right of his bed. Examination in the ordinary position, however, convinced me that the pharynx was normal and that the peculiar appearance I had observed was solely dependent upon my patient's unusual attitude.

"This observation may be verified by anyone with great ease. Let any patient be seated sideways, as though about to have the right ear examined. Then direct him to turn his head so that he looks over his right shoulder towards the examiner. It will then be noticed on inspection that the right half of the posterior pharyngeal wall is unusually prominent and that a very complete view of the right tonsillar region is obtained.

"When the patient turns his head towards the left, the appearances are, of course, reversed.

"I am not aware that this simple fact has been previously noted, though it appears to be of some practical value. In the routine examination of the pharynx such an alteration in the position of the patient's head improves the view very greatly. The lower pole and lingual prolongation of the tonsil become distinctly visible, a 'buried' tonsil is rendered much more prominent, and if, with a narrow spatula, the tongue be gently pressed towards the opposite side, the anterior surface of the epiglottis may be readily inspected in the majority of cases.

"The cause of the phenomenon is shown in the accompanying radiogram.

"A small quantity of bismuth emulsion has been injected into the center of the right tonsil (an enlarged tonsil which I was about to enucleate).

"The patient's head is turned towards his right shoulder. This rotary movement takes place chiefly at the joint between atlas and axis vertebrae; the lower cervical vertebrae do not participate in the movement. Even the axis is very prominent in the photograph, and, situated as it is behind the angle of the lower jaw and behind the small shadow of the bismuth in the tonsil, there can be little doubt that it is the cause of the retropharyngeal swelling which makes its appearance when the head is in this position."

W. B. C.

Empyema of the Nasal Accessory Sinuses and Its Non-Surgical Treatment. Harmon Smith, *New York M. J.*, 1917: CV: 721.

"Symptoms are by no means always characteristic. Toxaemia is peculiarly in evidence in the course of chronic sinus involvement." Etiologically there is a tendency to colds, but "seven-eighths of the sinus cases can be dated from an attack of influenza." The infectious diseases, too, are important facts. Pain is an important symptom in the acute cases, especially if it is the closed variety. This symptom is wanting in the chronic cases.

Among objective signs pus is frequently absent in the "closed" cases. If open, pus is seen in the middle meatus in involvement of the antrum, frontal or anterior ethmoid cells. If the posterior ethmoids or sphenoid are involved it appears in the nasopharynx. Polypi are frequently the result of the empyema. They also act as an obstruction to free drainage.

Treatment: "In acute cases operative measures are, as a rule, inadvisable." Much can be accomplished by shrinking the tissues with cocaine and adrenalin, thus establishing drainage. Steam inhalations give much relief. Among medicines belladonna and its derivatives, which dry up the secretions, are ill-advised. Rather we should use Dover's powder and those drugs which promote an outpouring of secretion. Irrigations with several of the well-known remedies give great relief. These are used in connection with the author's suction pump, by means of which the medicaments actually reach the interior of the sinus.

In addition to acute cases the author, by this method, has cured chronic cases of long standing. In some cases, complicated by polypi, not only has the empyema been cured but the polypi have likewise disappeared.

W. B. C.

ABSTRACTS IN PATHOLOGY

Complement Fixation in Tuberculosis with the "Partial Antigens" of Deyke and Much. Drs. Wood, Bushnell and Madden, *J. Immunol.*, 1917: II: 3.

To those who have been interested in the serodiagnostic aspect of tuberculosis two facts have been obvious; first, that the complement fixation test is more than promising, and, second, that the "perfect antigen" is still "*pia desideria*."

Besredka's, Bronfenbrenner's, Craig's, Miller's and Petroff's antigens, while good in many respects, have, nevertheless, failed to impress all the workers as perfect antigens.

The authors report the work with their "partial antigens," which is prepared by disintegrating the bacilli in 1 per cent lactic acid, filtering and extracting with alcohol, at varying temperatures and with ether. Such antigens contain various fatty acids, neutral fat and traces of protein:

The results with these antigens were as follows:

100% of clinically non-tuberculous cases were negative.

91% of latent (inactive) cases were negative.

90% of incipient cases were positive.

87% of active cases were positive.

92% of advanced cases were positive.

A. A. E.

A Procedure for Serum Diagnosis of Syphilis Especially Recommended for Hospital Routine. J. Bronfenbrenner and M. J. Schlessinger, *Am. J. Syphilis*, 1917: I: 2

The authors recommend the use of the complement present in human serum, titrated with antihuman amboceptor and cells—adding the guinea pig serum when necessary. They also use sensitized cells, as this permits quicker and more clean-cut results and also the use of a very small amount of complement.

A. A. E.

The Focal Pulmonary Tuberculosis of Children and Adults. Eugene L. Opie, *J. Exper. M.*, 1917: XXV: 885.

Studies have been made on autopsies of 50 adults and 93 children, from hospitals in St. Louis. Of these tuberculosis was the cause of death in eleven children and three adults. In the remainder of the cases tuberculosis was found in eleven children and forty-seven adults. The age boundary between childhood and adolescence and adult life was placed at 18 years. The method of study was X-ray photographs of the lungs (excised) followed by search for the lesion in the formalin hardened spec. An X-ray shadow was not taken as evidence of a calcified nodule. Questionable lesions were not considered tuberculosis.

His studies show that focal lesions are present in many children and nearly all adults; that they are identical and are distinct from the progressive pulmonary tuberculosis (phthisis) of adults.

The primary lesions of childhood are characterized as being massive foci—not more frequent in one lobe than another, and in the apex not more frequently than other parts.

In the first two years of life the lesions show no tendency to heal and are apt to be fatal. After the second year the lesion may become encapsulated and gradually undergo calcification. Of the foci in childhood, seven were in right upper lobe; three right middle; five right lower; five left upper and five left lower, *i. e.*, about as frequent in one lobe of the lung as another. Focal tuberculosis exhibits a marked tendency to involvement of the regional lymph nodes either within the lung or in the peribronchial regions. The pulmonary lesion often shows characteristics which indicate that it is the primary and the lymph node lesion the secondary focus. The focal lesions themselves are, in nearly one-half of the cases, sub-pleural.

Adult tuberculosis is of two types: (1) The focal type, which is identical with that found in childhood, except that there is a greater tendency for it to be either encapsulated or healed. The proportion of distribution in different lobes of the lung is also practically the same. (2) Apical tuberculosis. This type tends to spread diffusely throughout the apex, and is unaccompanied by caseation or calcification of the regional lymph nodes. This lesion is often fatal, but also often undergoes complete healing.

From Opie's data:

The incidence of focal tuberculosis increases continuously after the second year and at the seventieth year 100 per cent have lesions. At 18 years a large proportion of his cases had acquired lesions. The apical tuberculosis makes its appearance between the 10th and 18th year.

The primary infection in almost all adults occurs in childhood and shows the characteristics of the first infection in that it involves the regional lymph nodes, while the adult type or apical tuberculosis shows the characteristics of a second infection.

From his conclusions "focal pulmonary tuberculosis of adults is identical with the tuberculosis of childhood. It occurs in at least 92 per cent of all adults. It may be acquired between the ages of two and ten years, but in more than half of all individuals (in this city of St. Louis) makes its appearance between the ages of ten and eighteen years.

His data supports Naegeli (97%) and Burchardt (90%), who worked with a far larger number of autopsies, as to the proportion of individuals who have tuberculosis foci. It also supports Ghon in the distribution of focal tuberculosis in the lung.

The article is illustrated with several good text figures and several reproductions of X-ray photographs of excised lungs. M. L. R.

DEPARTMENT OF THERAPEUTICS

Conducted by J. B. McGEE, M. D., Cleveland

Arteriosclerosis: Willard C. Stoner, in the *American Journal of the Medical Sciences* for May, writes concerning the treatment of arteriosclerosis as follows: The modern tendency is not to regard arteriosclerosis as a disease, but as an anatomical result of various pathological processes. Allbutt's clinical classification, accepted by Osler, is: (1) high pressure arteriosclerosis (hyperpiesia and chronic renal disease); (2) involuntary or senile; (3) infectious or toxic (typhoid, syphilis, diabetes, lead). In discussing symptoms Stoner keeps in mind the simple classification into two types, viz: the hyperpietic and the involuntary or decreascent form. Arteriosclerosis advanced has no treatment, but the state of high blood-pressure which may be regarded as presclerotic has. Hyperpietic states are amenable to treatment if taken early. The early case, when put at rest in bed, with encouragement of elimination for a period of time, if favorable, will show a definite lowering of pressure, a lessened accentuation of the aortic sound, and a lessening of cardiac hypertrophy. He is sure it is the experience of many in these cases, to not uncommonly find a return to

apparently normal after an unfavorable prognosis had been given. These patients must not be treated at the expense of their well-being. It requires extreme tact in rightly managing them, for there is a tendency to live around the blood-pressure and become very introspective. Immediately they regard themselves as candidates for apoplexy. They very quickly label themselves as high blood-pressure victims, and become intensely neurotic. The blood-pressure estimations must always be favorable to their improvement. The problem is rather one of management than a particular drug. Venesection is of value in the high-tensioned case, is of value in warding off a crisis, and may be repeated at intervals in certain selected cases. Bleeding is contra-indicated in cases of high pressure, with kidney involvement, when there is a degree of anemia. It is contra-indicated in the decrescent form with low blood-pressure. In treating blood-pressure, we must appreciate that the process is largely compensatory, and our interference should be cautious. At best drug treatment is only an adjunct in the therapy of these cases. The iodids may be given in combination with bromids. For a failing heart no drug is superior to strychnin. As to digitalis, a good index is to administer it when the diastolic pressure is rising and pulse pressure lessening. The principle to be adhered to in the treatment of arteriosclerosis is not the sclerosis, but the morbid changes, toxic or otherwise. In the senile type, which is as natural as gray hair or arcus senilis, no treatment is indicated.

Pneumonia: In the *New York Medical Journal* for April 21st, Samuel Stern presents a successful treatment for pneumonia. The agent upon which he relies, and which he has used with universal satisfaction, is sodium citrate. He states that physiologically the combination of organic acids of foods, the citrates, malates, tartrates, etc., has with sodium or potassium bases the function of keeping in proper balance and solution the various albuminous substances of the blood and body tissues. He selects citric acid, and prefers sodium as a base. Sodium citrate in the system is converted into sodium carbonate, a most essential element to body metabolism. We keep in solution the albumins essential to normal viscosity. Combine this with the dilution of toxins of the bacteria by virtue of the freedom of use possible with this drug, and we need not therefore fear the violence of bacteria. Sodium citrate has served him in twenty-four cases of pneumonia, all with recoveries. He has treated patients from eighteen months to seventy-five years, with pneumonia of varying types—nephritic, tuberculous, alcoholic, post-operative—and one with poliomyelitis, with frank lobar pneumonia. Of three patients treated by others, two died, one recovered. The two who died were moribund when treatment was instituted. As to dose, two drams are given every two hours, with eight ounces of water for its diuretic and diaphoretic effect, and to aid gastric tolerance. Under this treatment, the respirations that had been rapid, labored and limited, with accompanying pain, showed almost immediate amelioration. The respiratory rate of 40 to 60 was lowered to an average of 28 to 35, and the usual temperature of 102.5° to 105° declined rapidly to 99° and 100.5° within 24 to 48 hours. Lysis, not crisis, was the result obtained, usually within four to six days.

Intestinal Stasis: William P. Cunningham, in *American Medicine* for April, writes concerning the dermatological aspects of chronic intestinal stasis. It has been a truism since the dawn of intelligent observation that sluggish bowels are bad for the skin. It was no surprise, then, when intestinal stasis, the origin of most of the constipation, was adduced as the origin of many cutaneous disorders. The dirty hue assumed by some patients in avowedly intestinal toxæmia is proof conclusive of the decided intimacy between the inner and outer integuments. Conceding that hyperpigmentation may be due to intestinal stasis, it is not improbable that

depigmentation or leucoderma may be likewise accounted for. Raynaud's disease has been confidently claimed by Lane as a product of his intestinal "cesspool." The coldness and numbness of the extremities which we encounter in some stasis cases need only aggravation and continuation to be transformed into the more serious condition.

There is no doubt that bromidrosis is directly dependent on chronic intestinal stasis. Hyperidrosis is an inexplicable phenomenon on any other hypothesis than that of toxemia from this cause. Unanimity prevails regarding the effects of constipation on acne. Yet many individuals live out their term habitually constipated and never exhibiting a sign of acne. As to eczema, it is in the intestinal tract that we have long recognized the fault of eczema to lie. Attention to the bowels and the diet have been prime requisites for the satisfactory management of the disease. Minimizing in no degree the ulterior effects of local irritants, we are still assured that to get lasting results our treatment must include the elimination of toxins *via natural*. Here again as in acne we are often confronted by the apparent contradiction that with active catharsis we are unable to favorably influence the lesion. Mineral oil, and a bandage, with proper restriction of putrefiable, may contribute largely to the desired result. It would be possible to extend the enumeration of cutaneous diseases plausibly dependent on intestinal putrefaction to all of those not otherwise accounted for, and even to many that are. As to treatment, castor oil—excellent and effective in its sphere of action—has given place to mineral oil, which is the ideal lubricant for the deranged drainage system. Sagging bowels are supported by belts. Nitrogenized foods are limited rigorously. Failing with these measures, we understand that we have not come to the end of our tether, but that if the severity of the pathological reactions demand it, operation may be resorted to, with every prospect of permanent relief.

The Senile Heart: Harlow Brooks, in the *Medical Review of Reviews* for May, treats of the conservation of the heart in the aged. The aged heart is not a term or a condition measured in years, since we find an old heart by no means infrequently in a relatively young person; it is really not the age of the patient as measured by his span of years, but rather the condition of the heart that constitutes the problem. We may summarize the functional result of the natural senile changes in the heart by the simple statement that the *heart of the aged is less able to do its work*. It must, therefore, seem axiomatic that the keynote of the conservation of the senile heart is that it should be called upon to do less work. The man of fifty who calls upon his heart to do the work of which it was entirely capable at sixteen or twenty is, to say the least, very indiscreet. The direct therapeutic application of this primitive and altogether axiomatic conclusion is that the work of the heart in old age must be minimized, and strain above that established by long habit in the individual must not now be exceeded. He is certain that the senile heart muscle is definitely less reactive to our muscle stimulants, digitalis, atropin, adrenalin, etc., than is the youthful or adult heart. It seems, then, that we have a constantly decreasing capability of response to the most reliable drugs which we must from time to time employ as heart muscle stimulants. It would seem obvious, then, that we are not to expect the results from heart medication in senility which we are justified in expecting in youth or adult life. He believes, however, that these drugs should be used earlier and with less therapeutic indication in old age as compared to youth. Rest is even more valuable in the senile heart than in the more youthful, only rest must when indicated be more absolute and more prolonged. The importance of the pulmonary circulation is to be remembered here. Slight bronchitis may be a very inconsequential matter in youth, but in the senile is a matter of weighty moment at all times, and all pulmonary congestions should be promptly treated. The renal state must be also considered, and the kidney be relieved so far as possible from a tendency to fibrotic changes, and hence to hypertension. He believes salt in

most cases should be cut down to the amount actually demanded, because of its very direct bearing on the retention of fluid in the tissues, which is in itself one of the most serious circulatory tendencies in the defective circulation of senility. He is rather doubtful as to the value of the milk diet in the senile heart. He rather favors the judicious use of alcohol unless a definite contra-indication exists. As to travel, as a general rule, the high altitudes are to be avoided, because of circulatory and respiratory reasons, and the warmer climates are more advisable than the colder.

Cardiac Neuroses: The *Medical Record* for March 24 (*Münchener medizinische Wochenschrift*) quotes Giegel to the effect that all diagnoses of cardiac neuroses are essentially negative—something arrived at by excluding all known organic disease. In cardiac neuroses the subjective predominates over the objective—oppression, pain, dyspnea, anxiety and palpitation. Objective finds may or may not be obtainable. A nervous subject has an oversensitive sensory nervous system, which responds to the slightest stimulus. He perceives the beating of his own heart, whether this is normal or accelerated. However, he is not always conscious of his own heart's action, and we must infer that when he is aware of it, it is because of some slight change in its activities. But temperament must be reckoned with, for a phlegmatic man may not react at all to mental influences which will upset the equilibrium of a sanguine man. The principal difference between nervous heart and a heart neurosis is that the latter not unfrequently appears in a nerve sound subject, and under similar conditions as psychic excitement and indigestion. In a nervous subject the heart is nervous, like all other structures with a certain innervation. In a nerve-sound man with a cardiac neurosis, the heart symptoms greatly dominate the disease picture, as in angina pectoris. If a man wakes out of a sound sleep with a cardiac paroxysm it is something more than general nervousness. He describes a case of temporary dilatation of the heart in which myocarditis was closely simulated with its arrhythmias, etc. Complete recovery was obtained. The man nerve-sound was a heavy smoker.

Bronchial Asthma. Otto Luerch, in the *American Journal of Clinical Medicine*, summarizes the treatment of bronchial asthma. A nervous predisposition, a diseased or easily affected mucous membrane, and a direct cause, an irritating agent, are necessary to produce bronchial asthma. The direct cause—that is, the irritating agent—varies and often is unknown. The etiology indicates the treatment. The nervous predisposition has to be treated, catarrhs must be cured, and the mucous membranes hardened. Also, the body must be immunized against the irritating agent, if that is possible, or, if not, the patient has to be removed from the cause, that is, sent to a place where the particular irritating agent is not present. The treatment of the nervous predisposition consists in the treatment of the enteroptosis. Not all enteroptics are asthmatics. Suitable exercises may be used, and suitable bandages worn. Sufficient rest in the recumbent posture is of equal importance to ease the circulation, and to secure a better distribution of the blood. All enteroptics have too much blood in the abdomen, and not enough in the upper portion of the body. Fresh air, day and night, is more necessary in this disease than in any other. Drugs have to be used as indicated: asafetida and valerian to quiet and to relieve cramps; the bromides and other hypnotics to produce sleep; tonics to increase appetite and to tone the system, or whatever seems to be called for. Hay-fever and asthma associated has been treated on a large scale with antitoxin serum prepared by injecting horses with pollen toxin. Reports differ as to the efficiency of the treatment. A number of drugs are used to increase the resistance of the organism and influence the attack. Strychnine in increasing doses has given good results in some cases. Arsenic is useful in all. It may be given by mouth or preferably hypodermically. The organic forms

of the drug are less toxic than the inorganic. He has given pituitary extract in large doses (5 to 15 grains) three and four times daily, with marked benefit and no bad effect. Atropine acts in some cases by relaxing the spasms of the bronchi and diminishing secretion. In most it fails. Hyoscine and hyoscyamine act like atropine. The inhalation of oxygen should be tried in severe attacks. Morphine and heroin relieve, but are dangerous to use, because of the ease in establishing a habit. Spraying the throat with a solution of adrenalin 1:1000 sometimes gives good results.

Myocardial Efficiency: The February number of the *Therapeutic Gazette* comments editorially upon the bearing of myocardial efficiency upon treatment. One of the most important lessons to be learned by the medical student is the fact that the existence of a cardiac murmur does not indicate the administration of digitalis or other cardiac stimulants. In other words, while it may be important that the physician recognize that a valvular lesion exists, it is much more important that he obtain some conception of the strength of the heart muscle. In persons who are fortunate enough to have a healthy heart muscle only very excessive circulatory strain can produce much effect, and such effect passes away in the course of a very few minutes, so that within a remarkably short time after violent exercise the condition of the circulation is identical with its state before the stress was experienced. For this reason many physicians during the past few years have been in the habit of estimating the blood-pressure before and after exercise, and have thereby been enabled to determine whether cardiac treatment was necessary, what dose of a given stimulant was required, and equally important, how long treatment should be continued. Attention is called to Goodall's article in the *British Medical Journal* of October 14th, 1916, in which he well points out that many hearts which to all intents and purposes work perfectly well, when the individual is at rest, nevertheless show serious derangement and reveal definite evidence of myocardial impairment when called upon to do extra work under load. Goodall is one of those who believe that extra-systoles are not of little importance, but that the development of them on exertion always indicates a damaged myocardium. It is manifest, of course, in heart muscles which have undergone actual degeneration, as a result of some chronic or acute infection, that it is always a question as to how much work healthy muscles can accomplish, and again how much it can be improved in its ability to do work by training. Nevertheless, it is the function of the physician to attempt to get at least as near a correct estimation of his patient's actual cardiac state is possible by the aid of instruments of precision. In some cases the use of these tests would indicate that rest is the most essential factor in producing betterments; in others rest, followed in a few days by proper doses of digitalis and nuxvomica, will be the treatment required; and in still others, no medicines may be needed, but instead graduated exercises will in time improve the heart muscle to a point essential for maintaining a normal circulation.

The Academy of Medicine of Cleveland

ACADEMY MEETING

The one hundred and thirty-ninth regular meeting of the Cleveland Academy of Medicine was held May 18, 1917, at the Cleveland Medical Library, with R. K. Updegraff, President, in the chair.

Program:

1. Headache of Gastro-Intestinal Origin, by H. A. Berkes, M. D.

Those headaches of gastric origin are most frequently associated with Gastro-succorrhoea, with or without vomiting of fluid excessive in hydro-

chloric acid. Occasionally an a-chlorydria is present. In either case the proper treatment is toning up the central nervous system by hydrotherapy accompanied by rest, relief from nervous strain, hygiene, and a proper regulation of living. Abstaining from alcoholic drinks is very important. Immediate relief results from gastric lavage, which should be continued till the headache disappears.

Enteroptosis is a frequent source of headache which is relieved by abdominal bands and support.

Undoubtedly, constipation is the prime causative factor in headache, with inefficient elimination of material from the bowels. The fault may lie in too small a quantity of stool for the 24 hours, an irregularity in the time of evacuation, or an abnormality in the character of the stool.

Spastic constipation is the main cause—characterized by pencil-like or ribbon-like stools of small quantity. Coarse foods are contraindicated. It is best to use a bland diet, urge water, open other avenues of elimination and give the patient rest from nervous strain. The treatment is reinforced by the use of drugs, such as phenolphthalein, confection of senna, atropin, liquid albolene, oil enemata, etc.

Atonic constipation—the second type and the less frequent—is treated by coarse foods and much bulk, abdominal massage, exercise and plenty of water.

2. Headache Caused by Intracranial Disease, by R. K. Updegraff, M. D.

There are two types of intracranial disturbance causing headaches—inflammatory and non-inflammatory. The former (meningitis) is associated with fever, rise in the blood leucocytes and an increased cell count in the spinal fluid. The symptomatology of all inflammatory types is similar and can be differentiated only by lumbar puncture with cell counts, stained smears and cultures. Even tubercular meningitis may cause death in thirty hours. Those of syphilitic origin must be diagnosed likewise by lumbar puncture, also by physical examination as well as by the less important Wassermann test.

Tumors and abscesses must be diagnosed by the localizing symptoms. In either case the sub-arachnoid fluid may or may not show elevated pressure and increased cell count.

3. Headache of Ocular Origin, by W. E. Bruner, M. D.

Those due to eye-strain are probably the most common, resulting either in eye-ache or headache in any part of the cranium.

Headache resulting from errors in refraction or accommodation are least apt to be produced by myopia. The slight errors which are usually missed in an examination are the most frequent types. Hence lenses are necessary often when no improvement in vision is noted. When examining children, atropin, not homatropin, should be used.

Muscular weakness or lack of balance in muscular tone may cause headache. Even migraine is improved and often cured by the correction of visual defects. Hence excessive use of the eyes in convalescence or chronic illness is to be discouraged.

Pathological changes in the eyes, such as cataracts, inflammation, etc., are frequent sources of headache.

4. Headache Caused by Diseases of the Accessory Sinuses of the Nose, by W. H. Tuckerman, M. D.

There is no distinct type of nasal headache. Those resulting from suppurative conditions in the nose and accessory sinuses often have headache present in the morning and absent in the afternoon. They are increased by stooping and are localized in the eye, frontal temporal or any region of the

head. No deductions can be made as to localization of the sinus involved, unless the ache begins at one side persistently. Nasal occlusion may give pain at the bridge of the nose or in the eyes simulating ocular disturbance, but not associated with the use of the eyes.

An unilateral purulent discharge from the nose is very significant—examination may show it coming from the middle meatus. Transillumination and X-rays are not always reliable. Puncture of the antrum with lavage is the most certain evidence of disturbance.

Another type, designated as pressure headache, is common. They may result from deflection of the septum, spurs, hypertrophy of the inferior or other turbinates with pressure of the two mucous surfaces together. These origins can be eliminated by use of cocain or adrenalin to contract the tissues. In many infectious diseases the headache can be explained by swelling of the nasal mucosa, with apposition of the septum to the lateral structures.

In cases where there is doubt as to whether the eyes or the nose and its sinuses are at fault the eyes should be examined and eliminated first.

BOOK REVIEWS

A Manual of Nervous Diseases. Irving J. Spear, Professor of Neurology, University of Maryland. 660 pages, with 172 illustrations. Cloth. Price, \$2.75.

In the preface the author states he has found that the student of medicine, as well as the general practitioner, regards the study of nervous diseases as particularly difficult. He believes this impression to be due to a lack of proper understanding of the anatomy and physiology of the nervous system, and of the correct methods of examining the patient. Following this theory, the truth of which is only too apparent to one teaching organic neurology, the author devotes 180 pages to the description of these fundamental subjects. It is this part of the work which is especially commendable and which can be especially recommended to students or physicians who desire to obtain a knowledge of the salient facts in regard to the nervous system. There are numerous diagrams and photographs which elucidate the text.

The remainder of the book, in which the more common diseases of the nervous system are described, is written in a clear, simple style, stating facts so far as known and omitting lengthy discussions and vague theories.

T. S. K.

The Practical Medicine Series. Under the General Editorial Charge of Charles L. Mix, A. M., M. D., Professor of Physical Diagnosis in the Northwestern University Medical School; Hugh T. Patrick, M. D., and Peter Bassoe, M. D. Vol. X, Series 1916. Cloth. Price, \$1.35.

It scarcely seems necessary to call attention to this excellent book, as it is fully up to the standard of volumes published in previous years. The contents consists of concise but comprehensive abstracts of the literature appearing during the past year. The abstracts are arranged systematically, so that one can readily obtain the latest information on any subject concerning which articles have been written. For example, ten consecutive pages are devoted to the subject of acute anterior poliomyelitis. Another useful feature of the book consists of a fairly complete index.

T. S. K.

Practical Medicine Series. Vol. 1, 1917. **General Medicine.** Edited by Frank Billings, M. S., M. D., Chicago. The Year Book Publishers. Price, \$1.50.

Doctor Billings has, with his usual good judgment, sifted the wheat from the chaff, and we find in this small volume the advances and reviews of

note which have appeared during the past year. The abstracts are full enough to be of practical value, so that it is not always necessary to search out the original sources. We do not know of a better way to keep abreast of the times than to review this volume yearly, if one must limit his reading to reviews. As usual, the easy style of the author makes the volume most readable.

H. S. F.

The Medical Clinics of Chicago. Vol. II, 1917. W. B. Saunders Co.

As one of the last numbers of the Chicago Clinics it is in keeping with the usual high standard. Note may be mentioned of the clinic of Doctor Abt on pyelitis of infancy. Future numbers of the Clinics will be devoted to the various medical centers of the country, thereby making the publication a national one. This broadening of field will make the work more acceptable.

H. S. F.

ACKNOWLEDGMENTS

The Newer Methods of Blood and Urine Chemistry. By R. B. H. Gradwohl, M. D., Director of the Pasteur Institute of St. Louis and the Gradwohl Biological Laboratories, St. Louis, and A. J. Blaivas, Assistant in the same; Sometime Technician in Pathological Chemical Laboratories, New York Post-Graduate Medical School and Hospital; and former Assistant Chemical Laboratory, St. Luke's Hospital, New York City. With 65 Illustrations and 4 Color Plates. C. V. Mosby Co., St. Louis, 1917. Price, \$2.50.

An Index of Differential Diagnosis of Main Symptoms. By various writers, Edited by Herbert French, M. A., M. D., Oxon., F. R. C. P., London; Physician Pathologist, and Lecturer, Guy's Hospital; Consulting Physician to the Radium Institute. Second Edition. With 37 Colored Plates and over 300 Illustrations in the text. William Wood & Company, New York, 1917. Price, \$10.00.

Diseases of the Stomach. A Text-Book for Practitioners and Students. By Max Einhorn, M. D., Professor of Medicine at the New York Post-Graduate Medical School and Hospital; Visiting Physician to the German Hospital. Sixth Revised and Enlarged Edition. William Wood & Company, New York, 1917. Price, \$4.00 net.

Impotency, Sterility, and Artificial Impregnation. By Frank P. Davis, Ph. B., M. D., Fellow American Medical Association; Ex-Secretary Oklahoma State Institution for Feeble-Minded; Author of "How to Collect a Doctor Bill," "The Doctor: His Book of Poems," "The Physician's Vest-Pocket Reference Book," etc.; Formerly Editor and Publisher, Davis' Magazine of Medicine. C. V. Mosby Company, St. Louis, Mo., 1917. Price, \$1.25.

The Medical Clinics of Chicago. Vol. II, Number VI (May, 1917). Octavo of 252 pages; 56 illustrations. Published Bi-Monthly. W. B. Saunders Company, Philadelphia, 1917. Price, \$8.00 per volume.

MEDICAL NEWS

Dr. E. P. Baldwin, of Saranac Lake, N. Y., delivered the annual oration to the Alpha of Ohio Chapter of Alpha Omega Alpha at the Western Reserve Medical School, Monday afternoon, May 14th. His subject was "Latent Tuberculosis: Its Relation to Military Service." The lecture was attended by the undergraduates and by members of the local profession. In the evening the chapter gave a dinner at the University Club in honor of Dr. Baldwin.

Elaborate arrangements have been made by the Alumni Association of the School of Medicine of Western Reserve University for its reunion, June 11th to 16th. Clinics are to be given at the Lakeside, Charity, City, and St.

Luke's hospitals. The program includes a dinner on the 14th and a smoker on the 12th. The evenings of June 13th and 15th have been reserved for class and fraternity dinners.

New Appointments to Western Reserve Medical School Faculty.—The absence of a number of the members of the faculty of Western Reserve Medical School with Base Hospital No. 4 has made necessary certain changes on the teaching staff. Dr. Roger G. Perkins is acting as secretary of the faculty in place of Dr. Howard T. Karsner. Dr. E. P. Carter has temporary charge of the teaching in the Department of Medicine while Dr. Hoover is away.

Stark County Medical Society.—The regular meeting of the Stark County Medical Society was held Tuesday, May 22, 1917; Canton Chamber of Commerce, Canton, O.

Program:

Report of the State Meeting—Dr. E. J. March, Councilor, Canton.
Pituitrin—Dr. L. A. Crawford, Alliance.
Purpura in the New Born—Dr. G. Y. Davis, Sebring.
The Conquest of Venereal Disease; a Historico, Sociological Discussion—
Dr. A. E. Williams, Hartville.

Officers:

Dr. J. A. Rheil, President.....*.....Malvern
Dr. Fred G. King, Secretary.....Canton
Dr. L. A. Buchman, Treasurer.....*.....Canton
Dr. D. S. Gardner, Committeeman Medical Defense.....Massillon

Dr. Walter G. Stern, of Cleveland, Orthopedic Surgeon to the Mt. Sinai Hospital, was elected Vice-president of the American Orthopedic Association at its annual meeting in Pittsburg, June 2, 1917.

Appointments to Visiting Staff of the City Hospital for Year 1917:

C. A. Hamann, M. D.....Chief of Surgical Division
E. P. Carter, M. D.....Chief of Medical Division
H. A. Becker, M. D.....Asst. Chief of Surgical Division
C. W. Stone, M. D.....Asst. Chief of Medical Division

Surgical Division

Surgery—

C. A. Hamann, M. D.....Visiting Surgeon and Department Head
H. A. Becker, M. D.....Visiting Surgeon and Assistant Department Head
O. T. Thomas, M. D.....Visiting Surgeon
F. C. Herrick, M. D.....Visiting Surgeon
C. H. Lenhart, M. D.....Visiting Surgeon
O. A. Weber, M. D.....Visiting Surgeon
E. P. Monaghan, M. D.....Visiting Surgeon

Diseases of the Eye—

C. C. Stuart, M. D.....Visiting Ophthalmologist and Department Head
S. S. Quittner, M. D.....Visiting Ophthalmologist and Asst. Department Head

Diseases of the Ear, Nose and Throat—

J. N. Lenker, M. D.....Visiting Laryngologist and Department Head
W. H. Tuckerman, M. D.....Visiting Laryngologist and Asst. Dept. Head
C. L. McDonald, M. D.....Visiting Laryngologist

Genito Urinary Diseases—

H. L. Sanford, M. D.....Visiting Surgeon and Department Head

Obstetrics—

A. H. Bill, M. D.....	Visiting Obstetrician and Department Head
J. J. Thomas, M. D.....	Visiting Obstetrician and Asst. Department Head
G. B. Farnsworth, M. D.....	Visiting Obstetrician
W. T. Miller, M. D.....	Visiting Obstetrician

Medical Division*Medicine—*

E. P. Carter, M. D.....	Visiting Physician and Department Head
Richard Dexter, M. D.....	Visiting Physician and Asst. Department Head
S. J. Webster, M. D.....	Visiting Physician
F. J. Geib, M. D.....	Visiting Physician
Carlyle Pope, M. D.....	Visiting Physician
C. L. Cummer, M. D.....	Serologist

Dermatology—

W. G. Gill, M. D.....	Visiting Dermatologist and Department Head
H. N. Cole, M. D.....	Visiting Dermatologist and Asst. Department Head
S. Englander, M. D.....	Visiting Dermatologist

Diseases of the Nervous System—

C. W. Stone, M. D.....	Visiting Neurologist and Department Head (On leave of absence—in active service with U. S. Army.)
O. P. Bigelow, M. D.....	Visiting Neurologist and Asst. Department Head
L. R. Ravitz, M. D.....	Visiting Neurologist
T. S. Keyser, M. D.....	Visiting Neurologist

Diseases of Children—

H. O. Ruh, M. D.....	Visiting Pediatricist and Department Head
O. L. Goehle, M. D.....	Visiting Pediatricist and Asst. Department Head
Fred Beekel, M. D.....	Visiting Pediatricist

Contagious Diseases—

H. O. Ruh, M. D.....	Visiting Physician and Department Head
O. L. Goehle, M. D.....	Visiting Physician and Asst. Department Head
Fred Beekel, M. D.....	Visiting Physician

Tuberculosis—

J. C. Placak, M. D.....	Visiting Physician and Department Head
A. N. Dawson, M. D.....	Visiting Physician and Asst. Department Head
W. C. Greenwald, M. D.....	Visiting Physician
E. F. Griesinger, M. D.....	Visiting Physician

Pathological Department—

P. S. Murphy, M. D.....	Resident Pathologist
M. L. Richardson, M. D.....	Visiting Pathologist (Appointed June 8, 1917, during the absence of Dr. A. B. Eisenbrey, First Lieut., Medical Officers R. C.)
S. C. Venable, M. D.....	Superintendent (During the absence of Dr. C. H. MacFarland, First Lieut., M. O. R. C. Summoned to active duty, Ft. Benjamin Harrison, Ind., on June 1st.)
L. J. Paul, M. D.....	Assistant Superintendent—Medical
E. P. Dowds, M. D.....	Resident Physician (Admitting officer.)
P. C. Gauchat, M. D.....	Resident Physician (Succeeding Dr. J. L. Reycraft, First Lieut. U. S. Naval Reserves, Great Lakes, Ill., summoned to active duty June 5th.)
L. G. Sheets, M. D.....	Resident Surgeon
J. H. Harter, M. D.....	Assistant Resident Surgeon
A. M. Wedd, M. D.....	Assistant Resident Physician
R. P. Forbes, M. D.....	Resident Pediatricist and in Contagious Diseases
John L. Olivenbaum, M. D.....	Roentgenologist (non-resident).

Interne Appointments—1917

July 1, 1917: J. C. Monnier, A. B. Cook, W. R. Goff, L. S. Merrill, M. Mahrer, J. M. McCleary, C. W. Bray, J. J. Selman, D. L. Reese, W. P. Lowry, E. C. Schoolfield, Clyde H. Cable, F. P. Geraci.

October 1, 1917: F. Meyers, L. T. Sanders, W. H. Wright.

District Health Officer, State Board of Health.—California State Civil Service examination; date of examination, June 30, 1917; last day for filing application, June 23. The California State Civil Service Commission announces an examination for District Health Officer to be held June 30, 1917, to provide a register of eligibles from which to fill six positions with the State Board of Health. The salary is \$3,000 per annum with all traveling expenses.

This examination will be conducted by the United States Public Health Service as a board of special examiners acting for the Civil Service Commission.

The duties of the position will be to represent the State Board of Health in one of the six State health districts; to enforce all State health laws, and all orders, rules and regulations of the State Board of Health; to co-operate with local health officers, and to perform such other duties as shall be prescribed by the State Board of Health.

Candidates for this examination must be holders of a degree in medicine, sanitary engineering, or public health, and have had at least one year's experience in public health work. They must further be prepared to devote their entire time to the performance of the duties of the position and to refrain from any other occupation.

The examination is open to all American citizens between the ages of 21 and 60 on the date of the examination, who meet the above requirements.

The subjects for the examination will be as follows:

	Relative Weight
1. Written Test	40
The questions under this head will be framed to draw out the candidate's knowledge of communicable diseases, bacteriology, epidemiology, and public health administration.	
2. Education, Experience and Fitness	60
At the time of the written test, candidates will be given an oral interview to determine their experience and fitness by a special board of examiners.	
Candidates should be careful to list in their applications all their training and experience which might fit them for the position, and to name as references men who can vouch for their experience and fitness. The application should be accompanied by copies of the candidate's publications, which will be returned, if the candidate so requests.	
Total.....	100

Four hours will be allowed for the written test, from 9 A. M. to 1 P. M.

The written test will be given in any of the following cities of the United States near which there are candidates: San Francisco, New Orleans, New York, Los Angeles, Cincinnati, Washington, Seattle, St. Louis, Chicago, Boston.

Candidates must secure a rating of at least 70% in each subject in order to pass the examination.

Persons desiring to enter this examination should apply at once to the State Civil Service Commission, Forum Building, Sacramento, California, or the United States Public Health Service, Washington, D. C., for application form No. 2, stating the name of the examination for which they are applying. Candidates from distant points are advised to telegraph for application blanks.

Completed applications must be filed with the California State Civil Service Commission at Sacramento, California, on or before June 23, 1917.

Director, Bureau of Communicable Diseases, State Board of Health.
—California State Civil Service Examination; date of examination, June 30, 1917; last day for filing applications, June 23. The California State Civil Service Commission announces an examination for the position of Director of the Bureau of Communicable Diseases, State Board of Health, to be held June 30, 1917. The salary is \$3,600 per annum.

The duties of the position include the charge of the Bureau of Communicable Diseases of the State Board of Health, which includes the Hygienic Laboratory and the Division of Epidemiology. The central laboratory and offices are located on the campus of the University of California at Berkeley.

This examination will be conducted by the United States Public Health Service as a board of special examiners acting for the Civil Service Commission.

Candidates for this examination must be holders of a degree in medicine and be experienced bacteriologists. They must further be prepared to devote their entire time to the performance of the duties of the position and to refrain from any other occupation.

The examination is open to all American citizens between the ages of 21 and 60 on the date of the examination, who meet the above requirements.

The subjects for the examination will be as follows:

	Relative Weight
1. Written Test	40
The questions under this head will be framed to draw out the candidate's knowledge of communicable diseases, bacteriology, epidemiology, and public health administration.	
2. Education, Experience and Fitness	60
At the time of the written test, candidates will be given an oral interview by a special board of examiners to ascertain the value of their experience and their fitness for the position.	
Candidates should be careful to list in their applications all their training and experience which might fit them for the position, and to name as references men who can vouch for their experience and fitness. The application should be accompanied by copies of the candidate's publications, which will be returned, if the candidate so requests.	
Total.....	100

Four hours will be allowed for the written test, from 1 P. M. to 5. P. M.

The written test will be given in any of the following cities of the United States near which there are candidates: San Francisco, New Orleans, New York, Los Angeles, Cincinnati, Washington, Seattle, St. Louis, Chicago, Boston.

Candidates must secure a rating of at least 70% in each subject in order to pass the examination.

Persons desiring to enter this examination should apply at once to the State Civil Service Commission, Forum Building, Sacramento, California, or the United States Public Health Service, Washington, D. C., for application form No. 2, stating the name of the examination for which they are applying. Candidates from distant points are advised to telegraph for application blanks.

Completed applications must be filed with the California State Civil Service Commission at Sacramento, California, on or before June 23, 1917.

The Cleveland Medical Journal

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JULY, 1917

No. 7

DIAGNOSIS AND TREATMENT OF CONGENITAL PYLORIC STENOSIS

BY CLIFFORD G. GRULEE, M. D., AND DEAN D. LEWIS, M. D.

CHICAGO, ILLS.

(Continued from June issue)

Case XI. George C., age 3 weeks, entered the Presbyterian Hospital January 18, 1916, on the service of Dr. Grulee. The complaint consisted in vomiting and loss of weight. At birth the child weighed $7\frac{1}{2}$ lbs. It was the second child born after 8 hours of labor, forceps delivery. It was nursed at the breast for 10 days every 2 hours. During this time the child had colic and cried a great deal. It was then given 2 oz. of milk, 1 oz. cream and 4 oz. 6% sugar solution, 2 oz. every 2 hours. This was continued for 10 days, when the food was changed to 11 oz. milk, 10 oz. water and 3 teaspoons of Horlick's Food, 3 oz. every 3 hours during the day and every four hours at night. This had been given to the child for 48 hours before its entrance to the hospital. Two yellow soft stools per day at first. Later there was a tendency to liquid stools and oftentimes brown. Vomiting had taken place at every nursing, sometimes during the nursing and again some minutes after. The vomited material contained curds. Oftentimes the nourishment was projected a foot from the mouth. The longer the nourishment remained in the stomach the more marked had been the force of the vomiting. It was estimated that the quantity of vomited material was about $\frac{2}{3}$ of each nursing. This vomiting had not occurred while the child was on the breast. The weight showed no increase from birth. It is interesting to note in connection with this case that a similar vomiting had been noticed

during the first six months in another infant who was then 16 months of age. This child had been breast fed for 5 weeks. There had been no vomiting up to the time when the child had began to be fed from the bottle, but the vomiting was less severe than in the present case. The first child at 16 months weighed $22\frac{1}{2}$ lbs. On examination a well developed baby with a rather asymmetric head was found. Cervical and inguinal glands could be palpated. There was a protuberance of the umbilicus, the epigastrium seemed to be very full and marked peristaltic waves were seen passing from left to right. A small tumor was found at the extreme border of the rectus muscle at the level of the umbilicus in the right mammary line.



CASE XI. Photograph taken ten weeks after operation.

On its entrance to the hospital this child weighed 6 lbs. 10 oz. Examination of the blood showed 6,000,000 reds, 15,500 whites and 85 per cent hemoglobin. After its entrance the child vomited the same as before. The morning after its entrance radiographs were taken which showed a distinct delay in the passing of the food through the pylorus.

Dr. Lewis operated on the 19th of January at 4 o'clock in the afternoon; ether anesthesia Dr. Herb. High median incision exposed the stomach which was full of gas and very dilated. This was punctured to relieve the gas. Posterior gastro-enterostomy was done and the punctured wound in the stomach closed. In the pylorus a typical white nodule was seen which was of cartilaginous consistency and very large. The abdominal wound was closed by layer suture and then an adhesive support was applied. The course of this case was the cause of much anxiety. The child showed a marked tendency to vomit and we had very little leeway.

After operation the weight fell rapidly so that on the 22nd of January it was only 6 lbs. The usual measures were employed—continuous saline enemas, breast milk by mouth and per rectum. It was only on the 21st of January that the weight curve began to increase. After the 26th of January the child retained almost all its food. The quantity of breast milk given was very small, an ounce rectally every 4 hours, $\frac{1}{2}$ oz. by mouth. This latter quantity was rapidly increased so that on the 30th the child took $1\frac{1}{2}$ to 2 oz. every 4 hours. The food was then changed as follows: Eiweiss milch 12 oz., dextri-maltose $\frac{1}{2}$ oz., 6 feedings of 2 oz. each every 4 hours. On the 31st this was increased—Eiweiss milch 15 oz., dextri-maltose $\frac{3}{4}$ oz., 6 feedings of $2\frac{1}{2}$ oz. every 4 hours. On the 2nd of February this was decreased to 14 oz. of Eiweiss milch, $\frac{3}{4}$ oz. dextri-maltose, 7 feedings of 2 oz. each every 3 hours during the day and 4 hours during the night. On the 4th this was increased again to 16 oz. of Eiweiss milch, $\frac{3}{4}$ oz. dextri-maltose, 2 oz. water, 6 feedings of 3 oz. each.

The child left the hospital the 5th of February weighing 6 lbs. $13\frac{1}{2}$ oz. During its stay in the hospital the temperature had been above 100.4° F. only once and this was immediately after the operation. In general one can say that the temperature remained within normal limits. The course of this case was slow but normal except that it had a little stitch abscess at one of the tension sutures. The future progress of this case has been very satisfactory.

Case XII. Dean P., aged 5 weeks, entered the Presbyterian Hospital on the service of Dr. Grulee the 12th of February, 1916. Complaint consisted in loss of weight; vomiting and colic. This was the first child, born the 8th of January after an 18 hour labor. Birth weight 8 lbs. $9\frac{1}{2}$ oz. The child was nourished at the breast for only a short time and was then given the bottle, one-half milk and one-half water and a teaspoonful of dextri-maltose to each three ounces every four hours. When the child was four weeks old it was given Eiweiss milch. The food was frequently changed during the week which preceded its entrance to the hospital but without appreciable results. The child showed a tendency to colic and constipation, having one to two stools a day by means of enema or suppository. In three weeks the weight had risen to 9 lbs. 7 oz., but had fallen again to 9 lbs. about two weeks before entrance to the hospital. There was some vomiting and for two weeks preceding this entrance this had been more marked; often-

times it was projectile. The child had a marked tendency to colic and a great quantity of flatus was noted. The infant had been treated by us since birth, or shortly after. When vomiting commenced we were able to note gradually peristaltic waves until these increased and showed a very pronounced intensity.

On entrance physical examination showed a well developed boy, well nourished without other signs than a well developed peristalsis. Radiographs were not satisfactory, but it was evident that the stomach was slow in emptying. After its entrance to the hospital the child showed the same course as before. It did not react to 1/1000 of a gr. of atropine every 4 hours. From the 11th to the 17th of February its weight dropped from 9 lbs. to 8 lbs. 12 oz. At this time it was decided to operate.

The operation was performed by Dr. Lewis; ether anesthesia by Dr. Herb. The usual median incision was made and a large hard tumor was found in the region of the pylorus. Posterior gastro-enterostomy was performed. The course of the disease in this case did not differ very much from the others already mentioned. During the first 48 hours the child vomited almost all that it took, even water. The vomited material was often green, at times containing particles of nourishment. By giving breast milk rectally and water and breast milk by mouth the condition became better up to the 24th. Then the vomiting had diminished very much and the weight had dropped to 8 lbs. 1½ oz. After this there was a rapid increase of weight so that on the 29th the child weighed 9 lbs. He still vomited a little, but the vomiting was never of a projectile character and did not seem to contain an appreciable portion of food. The child at present is in excellent condition.

Case XIII. Albert S., aged one month, entered the Presbyterian Hospital April 29th, on the service of Dr. Grulee. The complaint was of vomiting, loss of weight, and anuria. He was the second child, born of normal labor. Birth weight, 3530 grams. For the first three weeks he was fed every four hours at the breast, then on milk and malt sugar mixture and for twenty-four hours previous to entrance on condensed milk. He was weaned because of failure of the supply of breast milk.

For the first 11 days of life there was no disturbance, but when about two weeks old he had a severe attack of diarrhoea with 25 green mucus stools in one day, which was followed by a distinct tendency to constipation.

The vomiting began two weeks previous to entrance. At first it was two to three times a day, about one-half the nursing being vomited. Vomiting occurred immediately or 1 to 2 hours after nursing. This rapidly increased in quantity and frequency, and took on a projectile character. During this time the child became weaker and had a subnormal temperature. The weight at two weeks was 7 lbs. 2 oz., 1 oz. more than at birth. After this there was a steady loss in weight so that on entrance the weight was 6 lbs. 1 oz., 1 lb. below the birth weight. The urine was always reduced in quantity so that the few days before entrance there had been only one urination in 24 hours.

Examination showed an emaciated infant. Posterior, cervical, axillary and inguinal lymph glands palpable. No other points to be determined in examination, except in the abdomen, about two c.m. above the level of the umbilicus and 3 c.m. to the right was to be felt on deep palpation a hard mass about the size of a hickory nut. When some food was given there appeared a most marked peristaltic action of the stomach with slight antiperistalsis.

An immediate diagnosis of pyloric stenosis was made.

Blood: Erythrocytes, 6,550,000; leucocytes, 9,650; hemoglobin, 85 per cent. Throat culture negative. Urine negative.

The infant was operated upon by Dr. Lewis the morning of April 13th. A marked thickening of the pylorus was found and a posterior gastro-enterostomy performed.

Following the operation there was a slight rise in temperature, which came down on the second day and remained below 100.4° F. thereafter. The weight on the second day had dropped to 5 lbs. 14 oz., but rose so that on May 23rd it had reached 6 lbs. 11½ oz.

The child was given normal salt solution rectally and nothing except very small quantities of water was given by mouth until the fourth day after the operation. From then on increasing quantities of breast milk were given. During the first few days the breast milk in small quantities was given rectally which was very well retained.

The vomiting practically ceased on the fourth day. There was a slight superficial wound infection.

While on breast milk there was no vomiting, but on artificial food the vomiting increased and the vomitus was always bile stained. This lessened perceptibly on the return to breast milk.

The child made a good recovery and is now in excellent health.

Case XIV. Louie G., age 9 weeks, entered the Presbyterian Hospital on the service of Dr. Grulee June 20, 1916. The complaint was vomiting, loss of weight and constipation. The child was born of a normal labor, weight $6\frac{1}{2}$ lbs. It had been fed on the breast every three hours from birth. At 6 weeks the mother began to give the child 2 oz. each feeding of a mixture of 6 oz. of milk and 9 oz. of water in addition to the breast milk. Up to this time the child had been perfectly normal. It then began to vomit one to two minutes after every feeding. This was projectile in type. From this time it began to emaciate, and the vomiting and loss of weight had continued ever since. Up to 6 weeks of age it had had three stools every day. Since that time it had been necessary to give an oil enema nearly every day. There had been no previous illness; father and mother both living and well; one other child $2\frac{1}{2}$ years old also well.

Physical examination showed an extremely emaciated infant with epigastrium bulging, very marked peristaltic waves, and a palpable tumor in the region of the pylorus. The child's weight was 6 lbs. 9 oz. and an immediate operation was advised, and the child was taken from the hospital by the parents immediately. On the 24th of June the child returned, the condition being exactly the same as previously. On this date the weight, however, had dropped to 5 lbs. 4 oz., showing a most alarming drop of weight in 4 days. The child was immediately put on 6 feedings of 3 oz. each of breast milk.

The operation was performed by Dr. Lewis on the 25th of June; anesthesia Dr. Herb. This time a typical Rammstedt operation was performed. This child was in an extreme condition; returned from the operating room with rather a cyanotic skin and vomited very small amounts of mucus, was given $1/1000$ gr. strychnia hypodermically and 35 c.c. of normal salt solution subcutaneously. An hour after it was given one ounce of 6 per cent dextrose per rectum which it retained. This was repeated again in two hours, and at 4 in the afternoon 2 oz. of breast milk were given by mouth and 3 drams were returned. The dextrose solution was given every 4 hours per rectum, and breast milk 2 oz. by mouth. The dextrose solution was well retained. At 8 P. M. a small quantity of breast milk, about 2 drams, was returned. The child retained almost all of the breast milk from then on, occasionally spitting about a dram or two. The dextrose was well retained. On the 27th $1/2000$ gr. strychnia was given hypodermically once.

This was repeated twice on the 28th, and twice a day thereafter for two days. In this instance vomiting was never a disturbing factor and the child went on to an uneventful recovery. On the 29th the quantity of breast milk in 24 hours was increased to $13\frac{1}{2}$ oz.; the 1st of July the child was given 16 oz. Eiweiss milch, $\frac{3}{4}$ oz. dextri-maltose, 2 oz. water, 6 feedings of 3 oz. each. The early feedings of breast milk were all by gavage, the stomach being washed previously. There was never any rise of temperature above 99.4° F. The weight showed a steady increase, so that when the child left the hospital on the 13th of July the weight was 6 lbs. 8 oz.

At the time of entrance the blood showed 4,440,000 reds; 5,300 whites; 70 per cent hemoglobin. Urine negative. This child was in excellent condition when last heard of over six months after the operation.

Case XV. Mary J. S., 7 weeks of age, entered the Presbyterian Hospital July 15, 1916, on the service of Dr. Grulee. The complaint was vomiting and loss of weight. The history was that when the child was three weeks old she began to vomit. This occurred almost always immediately after feeding; practically all of the food was vomited each time. Vomiting was not especially projectile, though at times it was thrown as far as a foot. During the few days before entrance this had become much worse and the child vomited even water. The weight at birth was $7\frac{1}{4}$ lbs. The child had then gained up to $7\frac{3}{4}$ lbs. and gone back to 7 lbs. on the day of entrance. Otherwise the child's condition had been excellent. It had been breast fed from birth every three hours; birth normal in eight hour labor, and first and only child.

On examination aside from a slight degree of exudative diathesis, the only findings were in the abdomen. The epigastrium was distended and very marked gastric peristalsis was noted. A tumor was felt in the region of the pylorus.

On entrance the child weighed 6 lbs. 14 oz. Immediately after entering the hospital the child was taken to the operating room and the operation performed by Dr. Lewis; ether anesthesia by Dr. Herb. A midline incision was made. The pylorus was very much thickened while the tumor formed a mass about $3\frac{1}{2}$ c.m. long. This was divided longitudinally and the mucous membrane on the duodenal side of the pylorus was perforated. This was closed by sutures. Immediately after the operation the temperature rose to 102° F. and went as high as 103° F. the day after and then within 48 hours dropped to normal and remained normal during the

rest of the child's stay in the hospital. Two hours after the operation the child was given 1/200 gr. morphine hypodermically to quiet it, as it seemed to be very restless and in some pain. Normal salt solution, 2 oz., was given every 4 hours rectally and one ounce of breast milk every 4 hours rectally. Most of these were rather well retained. The quantity of breast milk was increased to 1½ oz. on the 17th, some water being given by mouth with the medicine dropper. The feeding was then gradually changed from rectal feeding to feeding by mouth, the child being put to the breast the first time on the 20th of July.

The weight curve was irregular. Immediately after the operation the weight rose so that on the 18th the child weighed 7 lbs. 4½ oz. After the child was put to the breast the weight gradually fell to 6 lbs. 15 oz. on the 21st, but it again rose and by the 25th, the day when the child left the hospital, the weight was 7 lbs. 2 oz.

The day after entrance the blood showed 3,720,000 reds, 12,500 whites; 80 per cent hemoglobin; urine was negative.

The child progressed rapidly after leaving the hospital and when last heard from some eight months after operation it was in excellent condition.

Case XVI. Carl F., 6 weeks of age, entered the Presbyterian Hospital August 13, 1916, on the service of Dr. Lewis. The complaint was vomiting and loss of weight. This vomiting began first when the child was three weeks old and had vomited every day, though some of the food was probably retained. At birth the weight was 8¾ lbs., and when last weighed before entrance it was 8 lbs. 2 oz. At the end of three weeks it had weighed 9 lbs. 12 oz. The child had no other illnesses, normal birth and breast fed baby. On the 8th day it had been circumcised. Three weeks before entrance marked gastric peristaltic waves were noted and had been present ever since. The stools had been small. There had been some temperature, at one time as high as 101° F., but this had been normal for a few days previous to entrance.

Physical examination showed the child in a fair state of nutrition with a distention of the epigastrium and marked peristaltic waves; otherwise nothing to be noted. The operation was performed on the day of entrance by Dr. Lewis under ether anesthesia. The usual incision was made and a typical Rammstedt operation was performed. There was some hemorrhage at the duodenal end of the incision which was controlled by sutures. The weight at

entrance was 8 lbs. 1 oz. Four hours after the operation the child was given 1/100 gr. morphine sulphate hypodermically. At this time an ounce of breast milk was given rectally which was retained. At one hour thereafter normal saline continuous enema was given. This was always stopped one hour before time to give the breast milk, an ounce of which was given every 4 hours. The child at 4 o'clock the day of the operation was given 3 oz. of water by mouth. This was vomited together with some mucus. At 7 o'clock the same evening a dram of water was retained. Normal salt solution was stopped at 5 o'clock the following morning. At 10 o'clock on the morning of the 14th an ounce of breast milk was given by mouth, which was immediately rejected, the rectal feeding being retained. At 2 P. M. on the 14th an ounce of breast milk was retained by mouth, but at 6 some of this was vomited. An ounce of 6 per cent dextrose solution was given by rectum that evening and at regular intervals thereafter. Rectal feeding was stopped altogether on the morning of the 15th and 1 to 1½ ounces of breast milk with occasional additions of dextrose solution were given by mouth thereafter.

Vomiting ceased very rapidly and the child made an uneventful recovery, leaving the hospital on the 23rd of August. The weight curve in this case was irregular. The day after entrance the weight had risen to 8 lbs. 7 oz. It fell thereafter to its lowest point on the 19th, when it had dropped to 8 lbs. 3 oz. On the 23rd it had again risen to 8 lbs. 7½ oz., showing a net gain in 10 days of 6½ oz. Nothing further has been heard from this case, though at the time of leaving the hospital the child was in excellent condition.

Case XVII. Paul K., aged 6 weeks, entered the Presbyterian Hospital September 22, 1916, on the service of Dr. Grulee. Complaint vomiting and failure to gain weight. The child was born with normal labor; birth weight, 7 lbs. 14 oz. Vomiting in this case began as soon as the child was put to the breast and continued up to the time of entrance. Every feeding had been vomited. The child had always been breast fed, first every three hours, later every two hours. When three weeks old became constipated and was given ½ dram castor oil every day for 2 weeks; since then castoria. No other complaint. Father and mother living and well; two brothers, 6 and 8, living and well. No similar trouble with these two.

On examination, fairly well nourished baby, 6 weeks old, apparently not distressed. Physical examination was negative ex-

cept for a very slight papular rash over the chest and the abdominal symptoms which showed the epigastrium bulging with marked peristalsis and a palpable tumor in the region of the pylorus. Weight on entrance was 7 lbs. 4 oz. Temperature normal.

This child was operated upon the following morning by Dr. Bevan; ether anesthesia Dr. Herb. A typical Rammstedt operation was done without complications. The temperature rose to 101° F. immediately after the operation, dropped on the 3rd day, and with one exception remained within normal limits thereafter. This child was given 1/1000 gr. strychnia hypodermically immediately after operation. Feeding in this instance was entirely by mouth, one ounce breast milk being given every 4 hours; normal saline rectally. The breast feedings for some time were vomited and the rectal feedings were not well retained until the evening of the 26th, and they were retained irregularly thereafter; in addition on the 27th an ounce of dextrose, 6 per cent solution, was given by mouth every 4 hours. Vomiting had not ceased entirely by the 30th, but the child was vomiting much less frequently and conditions were improved. The child left the hospital on the 30th weighing 7 lbs., having made a rapid gain of 7 oz. in the 4 days previous to departure. This child had made an uneventful recovery when last heard from several months after the operation and was in excellent condition. On the day of entrance the blood showed 5,450,000 reds, 10,400 whites, and 85 per cent hemoglobin. Urine negative.

Case XVIII. Nancy W., age 23 days, entered the Presbyterian Hospital on October 5, 1916, on the service of Dr. Lewis, having been referred by Dr. Skiles. The complaint was vomiting, loss of weight, small stools and continued crying. Birth normal. Child weighed 6 lbs. The child regained its birth loss. Symptoms began at 8 days, gradually increasing. The infant was very poorly nourished, cried continuously and seemed exceedingly hungry. Large peristaltic waves were seen in the region of the stomach. The child on entrance weighed 5 lbs. 9 oz.

Operation by Dr. Lewis; ether anesthesia by Dr. Herb. A typical Rammstedt operation was performed. Following the operation one ounce to 1½ ounces of Ringer's solution was given rectally every 4 hours; an ounce of breast milk every 6 hours. The child vomited for the first 48 hours after the operation. Vomiting was much less on the third day, when it left the hospital. This child has made an uneventful recovery and was in good condition when last heard from.

(To be concluded in August issue)

RULES AND REGULATIONS FOR THE CONTROL OF COMMUNICABLE DISEASES

BY THE DIVISION OF HEALTH OF CLEVELAND

Foreword.—After several years of intensive work, a committee representing the various interests involved has completed a revision of the Health Code of the City of Cleveland. The accompanying paper is a compilation of those portions of the Code which relate to communicable, and therefore reportable, diseases, and of the regulations based upon this Code which are being put in effect by the Division of Health. Due to increasing knowledge of the subject, rather marked changes of opinion with reference to the management of communicable diseases have occurred in the past few years. It is hoped that these changes have been conservatively embodied in the new regulations as here set forth.

As the paper suggests at many points, particularly in its introductory sections, it was at first intended to be a briefer, more popular outline for the information of the public and for the guidance of public health nurses in the performance of their duties as quarantine officers. The paper grew in such a way as to be rather beyond what could be offered to the public, but is here published to acquaint physicians with the scope of the work to be undertaken by the Division of Health and to invite their co-operation in the work.

THE EDITORS.

Cause. The communicable diseases are due to the growth of minute organisms, familiarly called "germs," within the human body. To this class belong the so-called children's diseases and many other affections, both acute and chronic. Each case of this sort implies the entrance of germs into the body through some portal which may be the respiratory tract, the digestive tract, or an abrasion on the skin. It is the growth of germs within the body which results in the production of the symptoms characteristic of the several diseases. For an interval after the entrance of germs into the body, no evidence of their presence is noted. This interval is called the incubation period of the disease. During this period the germs are increasing in numbers until, finally, the individual becomes ill. In some diseases the early symptoms are not those characteristic of the disease; in these instances the first symptoms are called the

prodromal symptoms, and their recognition is very important in limiting the spread of infection.

Protection Against Disease. If its every need is supplied, a single germ is able to grow and subdivide with great rapidity, and within a very short time will produce innumerable organisms like itself. In the body, however, the growth of disease germs is more or less strongly resisted, and if few have entered they may be destroyed before they have had time to grow in sufficient numbers to produce symptoms. This is called natural immunity. It is an in-born characteristic in which individuals differ, and which undoubtedly varies in the same individual at different times. A lack of this immunity is called susceptibility. Almost all individuals are susceptible to some diseases and only a small number of individuals to others. To a slight extent, one's susceptibility varies with the condition of his general health and "fitness," but not to the extent popularly supposed.

Since, with very few exceptions, it is impossible to know who will take and who will not take a given disease, it is advisable to avoid infection unless, as for instance in the case of physicians and nurses, such exposure is imperative. It is especially desirable to avoid exposing infants and young children to these infections, many of which have a death rate entirely unrecognized by the majority of parents, or have complications which may seriously affect the child's future.

Why We Take Certain Diseases Only Once. There is a group of communicable diseases from which individuals, with rare exceptions, suffer but once. This group includes the so-called children's diseases; small-pox, typhoid fever, and several others. In the first attack of these diseases, an unknown protective something is produced by the tissues of the body which prevents the development of the disease on subsequent exposure, or an unknown something present in the tissues or tissue juices of the body is used up in the first attack, leaving the soil (the body) an unsuitable place for these particular organisms to grow. The first of these explanations is probably the more nearly correct. This is called acquired immunity. Persons who have had these diseases are often called "immunes," and those who have not had them, "non-immunes."

Preventive Medicine. Some disease-producing germs may be grown under artificial conditions, this serving to increase our knowledge of them. In nature, however, they grow only in the bodies of

animals, many of them only in the bodies of human beings. Each disease, therefore, is a continuous chain of transmission from one individual to another. It is the function of preventive medicine to devise methods by which this chain can be broken, and that of Cleveland's Division of Health, with the co-operation of private physicians and of the public, to put these methods in operation.

Factors in Control. The most important factor in the control of communicable disease is early isolation, even an isolation on suspicion, for many diseases are communicable before becoming fully developed, and, therefore, before a positive diagnosis can be arrived at. If the Division of Health is to be permitted to be of real service in preventing the spread of communicable diseases, physicians must report cases at once, and should have full encouragement from the public in so doing. The health campaign is handicapped not only by the failure of physicians to make a sufficiently prompt report, but also by the fact that many households pay no attention to minor ailments. The maximum protection that is possible cannot be secured unless parents call a physician for diagnosis whenever a small child is ill.

The value of this procedure was shown very strikingly in New York City during its epidemic of infantile paralysis of 1916. The epidemic was a severe one, but in spite of the fact that there were nearly 2,500 deaths from infantile paralysis alone, the number of deaths of children in the city was lower than usual, due largely to the fact that parents of all classes consulted physicians for the ailments of their children as never before. In the early weeks of the epidemic, many cases were found by house to house visitation which had never been reported. Many of these never having been seen by a physician. Such reports as were received were often very late. The contrary was the case in the latter part of the epidemic; the cases in general were reported early and many suspicious cases were reported which, on investigation by the experts of the Division of Health, proved not to be infantile paralysis. In other words, parents and private physicians co-operated in such a way that isolation could be established before the patient had exposed large numbers of people.

Diagnosis. The diagnosis of disease is based upon one or more of the following items: The symptoms presented by the patient, the results of a general physical examination, the inspection of the skin in diseases with a rash, and certain laboratory tests. With

respect to the first three of these, emphasis needs to be laid upon the mild and atypical or unusual character of many cases, which are, nevertheless, capable of spreading the disease widely and causing severe illness in others.

Much assistance in the diagnosis of several diseases communicable by direct contact is afforded by the laboratory. Samples taken from the nose and throat and examined under the microscope are of utmost value in the diagnosis of diphtheria and of other forms of sore throat, and in the recognition of persons who harbor these organisms without being ill. Such persons are called "carriers." Accordingly the Division of Health requires the submission to its own laboratory of cultures from the nose and throat to confirm all cases in which a diagnosis of diphtheria has been made, and of similar cultures from all who have been exposed to the disease. That a laboratory confirmation of diphtheria is required should not delay the use of antitoxin. The value of an early administration of antitoxin is so great that it should be given at once in cases which are clinically positive without awaiting a laboratory report.

In persons suffering from cerebro-spinal meningitis, and others not ill, the organism causing the disease may at times be found in samples taken from well back in the nose, and an examination to indicate their absence is required before release from quarantine of patients and persons exposed to the disease is permitted. In this disease, however, the greatest assistance in the diagnosis of actual cases consists in an examination of the fluid surrounding the spinal cord, secured by inserting a hollow needle into the spinal canal, a very simple and safe procedure. If the organism causing the disease is found, the diagnosis is confirmed. Occasionally no organism is found, and this fact combined with the number and character of the cells in the fluid may make the diagnosis with almost equal certainty. In infantile paralysis, also, an examination of the spinal fluid is an aid in diagnosis.

Assistance in Diagnosis. The Division of Health stands ready to assist private physicians, at their request, in the diagnosis of doubtful cases. In smallpox and chickenpox, it has for many years exercised this function, but other diseases should be, at least when they are present in epidemic form.

Reportable Diseases. In order that the Division of Health may be able to aid in their control, it must have knowledge of individual

cases of communicable disease, and the following list indicates those which are reportable¹:

Actinomycosis	Ophthalmia Neonatorum (any inflammation of the eyes of the new-born)
Cerebro-spinal Meningitis	Paratyphoid Fever
Chicken-pox	Pneumonia, Lobar or Broncho
Cholera (Asiatic)	Plague
Dengue	Pemphigus Neonatorum
Diphtheria (Membranous Croup)	Puerperal Fever
Erysipelas	Ring-worm (Tinea)
Favus	Scabies
Glanders	Scarlet Fever (Scarletina)
Hookworm Disease	Small-pox
Hydrophobia (Rabies)	Tonsil infections (Epidemic sore throat, streptococcus sore throat, Vincent's disease)
German Measles (Rotheln, Rubella)	Trachoma
Impetigo Contagiosa	Tuberculosis (all forms)
Infantile Paralysis (Acute Poliomyelitis)	Typhoid Fever
Influenza (Grippe)	Typhus Fever (Brill's Disease)
Leprosy	Venereal Diseases (Chancroid, Gonorrhea, Syphilis)
Lock-jaw (Tetanus)	Whooping Cough (Pertussis)
Malaria	Wool-sorters Disease (Anthrax)
Measles (Rubeola)	Yellow Fever
Mumps (Epidemic Parotitis)	

A report of cancer and pellagra and of occupational diseases and disabilities is required in Ohio by State law.

Whose Duty to Report. The duty of notifying the Division of Health of any reportable disease within twelve hours after the diagnosis has been made, or after knowledge of a case suspected of being such disease, has been laid upon any person in attendance upon such cases, and upon the public at large if the case has not been reported, or if there is no physician in attendance.

¹There has been included in this list several diseases which have been made reportable in Cleveland largely on account of Federal or State laws. Some of these do not occur in this latitude and if imported would not be communicable. Other diseases here given are extremely rare. Those which are common at all times, or occur in epidemics, and not infrequently result in the death of the patient, are indicated in heavy-faced type.

Furthermore, if any reportable communicable disease has occurred within ten days on any vessel entering the harbor, it must be reported to the Division of Health and no person shall disembark without permission.

Restrictions on Persons with Reportable Diseases. No person suffering from any reportable disease, including venereal disease in communicable form, shall be permitted to engage in the slaughter of animals for food, or work where food is handled, stored, or sold. Whenever required by the Commissioner of Health, any employee engaged in such occupation shall submit to a physical examination by a medical inspector, or be excluded from such employment. No person suffering from diseases readily communicable to children shall engage in teaching or in occupations bringing them in contact with numbers of children.

The Placarded Diseases. From a public health standpoint, the reportable diseases are not equally important and the presence of the diseases in the following list is indicated by placards on dwellings and apartments as a warning to the public. The diseases are:

Cerebro-Spinal Meningitis	Measles
Chicken-pox	Plague
Cholera (Asiatic)	Scarlet Fever
Diphtheria (Membranous	Small-pox
Croup)	Typhus Fever
Infantile Paralysis	Whooping Cough
Leprosy	Yellow Fever

Any other communicable disease which may be declared epidemic by the Division of Health may also be placarded.

Restrictions on Persons with Placarded Diseases. No person having any of these diseases shall in any way mingle with the public, nor shall he move or be moved from one building to another, except by order and under the supervision of the Division of Health.

The Quarantined Diseases. For the diseases in heavy-faced type, full quarantine regulations are enforced. Of these, cholera, leprosy, plague, typhus fever and yellow fever rarely or never occur in Cleveland; infantile paralysis and cerebro-spinal meningitis may occur as serious epidemics, but aside from that are not fre-

quent, small-pox being entirely preventable by vaccination² should not impose so heavy a burden as it does upon the Division of Health. This leaves as constant problems of the Division: diphtheria, measles, and scarlet fever.

The Meaning of Quarantine. Quarantine means that no person other than a legally qualified physician or midwife or a nurse³

³Any person caring for the patient.
in attendance upon the patient shall enter or leave the quarantined premises without a written permit from the Division of Health. Further, in scarlet fever, cerebro-spinal meningitis, diphtheria, and small-pox, it means that no article which has come in contact with the patient or his attendants can be taken out of the house; as, for instance, books, letters, milk bottles, etc.

Areas of Quarantine and Isolation. The quarantined premises will ordinarily be a dwelling-house with its yard. When a part of a building which is the abode of an entire household, as in a flat or a hotel suite, the quarantine may be limited to this part of the building. The patient and his immediate attendant should not come in contact with other members of the household. When the Division of Health is satisfied that such isolation is possible and will be conscientiously enforced, it may define an area of isolation within this area of quarantine.

Placarding of Areas of Quarantine and Isolation. These areas will be indicated, as a warning and protection to the public, by cards posted at the front and rear entrances to the area of quarantine and by cards indicating the isolated area. These cards shall not be removed except by the Division of Health, and upon their improper removal or destruction, it shall be the duty of any occupant or person in charge of such building to report the same.

When to Begin Quarantine and Isolation. Quarantine and isolation of the patient should begin at once upon diagnosis or on the appearance of symptoms which strongly suggest one of these diseases. These symptoms may be found in the appended table. The secretions from the noses and throats of all persons exposed to cerebro-spinal meningitis and diphtheria, even though they are free from symptoms, should be examined for the organisms causing these diseases. Those exposed to cerebro-spinal meningitis should be isolated until the report has been received—the activity of adults exposed to diphtheria need not be interfered with pending the

²According to present regulations no child, unless protected against small-pox by successful vaccination or by having had the disease, shall be permitted to attend any school, public, private, or parochial.

receipt of the report. In either disease, if the organism is found, quarantine is required as for a clinical case. If physicians will secure cultures from the nose and throat of all persons exposed to diphtheria at the time the diagnosis culture is taken and from well back in the nose of similar exposed persons in cerebro-spinal meningitis, the work of the Division of Health will be diminished, and the entrance of public health nurses or district physicians into families employing private physicians may be made unnecessary.

To avoid infection, the isolation of suspicious cases and contacts should be, for all diseases in which isolation of the patient is required, maintained outside the area of isolation of the patient.

Supervision During Quarantine. The Division of Health is empowered to supervise the application of quarantine regulations in communicable disease and to compel a proper observance of all details necessary for the protection of the public.

Mode of Transmission. In many communicable diseases the organism which causes them is contained in discharges from the throat, mouth and nose, and in discharges from the eyes, ears, or suppurating glands. In some they are contained also in the stools and urine. In general terms, communicable diseases are spread mainly by direct contact either with active cases, recent convalescents, mild and missed cases, or carriers—the latter being individuals who are not sick but who harbor the organisms of disease either following an attack of the disease or from intimate contact with patients.

Since many of the placarded diseases and all common colds are communicable by the spray of coughing and sneezing, children should be taught before they enter school to cover their mouths and noses during these acts. We make a great effort to teach persons who have contracted tuberculosis to exercise these precautions, but it is much easier to establish these habits in childhood.

Indirect contact with cases, convalescents, etc., through freshly contaminated eating utensils, soiled clothing, cats, dogs, and the hands and clothing of attendants, constitute less important factors in the spread of communicable disease. In scarlet fever, diphtheria, streptococcus sore throat, and typhoid fever, the organisms may be transmitted in food supplies, particularly in milk, the latter causing from time to time extensive epidemics of these diseases.¹

¹It may be of interest to indicate briefly the mode of transmission of certain diseases not included in the scope of this outline. In dysentery, cholera, and typhoid fever the infective organisms are contained in the discharges from the bowels, and in the last, frequently also in the urine. From

Convalescents from scarlet fever, measles and German measles often peel to a greater or less extent and have long been considered capable of transmitting the disease while the peeling continues. Further experience has shown that skin peelings are not dangerous. In small-pox and chicken-pox the patient is infective until the crusts have separated.

Instructions to Households in Quarantined Diseases. The physician in attendance upon a person having, or suspected of having a reportable disease is expected to notify the Division of Health of such disease, and to instruct the members of the household in measures for preventing its spread. In such as require quarantine, the instructions should be as follows:

(1) If the patient is not removed at once to a hospital, he shall have a separate bed in a room screened against flies. (2) All persons, except those necessary for the care of the patient, shall be excluded from the sick room. (3) All animals shall be excluded from the sick-room. (4) The room shall be kept well aired and clean. It should be freed from unnecessary carpets, draperies and furniture before the patient is placed in it. Dust should be avoided by frequent moist cleaning of woodwork and floors. (5) The person caring for the patient shall avoid coming into contact with any other person within the household or elsewhere. (6) The person caring for the patient should thoroughly wash his hands with soap and water after handling the patient or any object which may be contaminated. (7) All discharges from the nose and mouth, ears and suppurating glands, shall be burned or disinfected. It is recommended that these discharges be received on pieces of gauze or other soft cloth and be dropped in a paper bag which is conveniently placed. The bag and its contents can be easily burned. (8) Objects which may have been contaminated by the patient shall be disinfected before being removed to any place where they might become possible sources of infection.

In chicken-pox the only essential requirement is ordinary cleanliness and the avoidance of contact with those who have not had the disease.

these discharges, water and milk supplies are contaminated in various ways. Flies are mechanical carriers of the infective organisms in the above diseases, and also in various inflammatory conditions of the eyes and skin, in anthrax, glanders, etc. Certain other diseases are transmitted by biting insects; flies, in sleeping sickness, etc.; mosquitoes, in malaria, yellow fever, dengue; ticks in Texas fever, Rocky Mountain spotted fever, relapsing fever; lice, in typhus fever; fleas, in plague.

Administration of Communicable Disease Regulations. At the present time the administration of the regulations concerning quarantine is, in some parts of the city, entrusted to sanitary policemen and public health nurses jointly—the former placing placards on quarantined premises and leaving instructions that children may not attend school or adults go to work. In other parts of the city at present and ultimately throughout the city, all quarantine work will be placed in the hands of public health nurses. After placarding the area of quarantine, and an area of isolation, if this is possible, the information asked for on blanks provided for the purpose shall be procured, and no person shall refuse to answer these questions.

It is the duty of the nurse to determine whether the details of quarantine and isolation of the patient and attendants are properly carried out, and to ascertain whether the directions which have been given by the attending physician to prevent the spread of the disease have been understood and are being observed. In event of their non-observance, the Division of Health shall take proper legal steps for their enforcement.

Removal to Hospital. The opportunities for the spread of a communicable disease, when cared for in the home, are so numerous and the establishment of an isolation which will safeguard the health of other members of the family and that of the public is so difficult that the removal of such patient to a hospital should be more generally practiced. In cases of special danger, by reason of the infectiousness of the disease, or of the location of the patient, the Division of Health may cause the removal of the patient to a hospital. After removal to the hospital, the house is to be disinfected at once, but, if there remain in the house children who have not had the disease, the card is not removed until the period of incubation is safely passed.

Work and School Permits. It is the policy of the Division of Health to interfere with the activities of a family and with the school attendance of its children as little as possible while still safeguarding the health of the public. To this end, permits to mingle with the public may be granted in writing after an investigation which shows that both isolation and quarantine have been satisfactorily established and that the patient is in charge of a reliable attendant. Those to whom such release from quarantine is given are required to make a declaration in writing to the Division of

TABULAR STATEMENT CONCERNING THE IMPORTANT COMMUNICABLE DISEASES

Disease and Its Cause.	Incubation Period.	Early Symptoms 1	Principal Symptoms and Signs of the Developed Disease. 1	Portal of Entry.	Mode of Transfer.	Character of Isolation of Patients and Immediate Attendants.		Control of Exposed Persons and Persons With Symptoms Suggestive of Disease.	School Permits For Other Exposed Children.		Permits Allowing Exposed Adults to Mingle With the Public		Release From Quarantine.			Disinfection.		
						Patient.	Attendants.		Immunes.	Non-Immunes.	Immunes.	Non-Immunes.	Patient.	Attendants and Others.		During Disease.	After Recovery. 38	
														Immunes.	Non-Immunes. Adults Children.			
INFANTILE PARALYSIS (Probably Bacterial)	2 days to 2 weeks or more. Does not usually exceed 8 days.	Early symptoms, if noted, are often taken to be those of tonsillitis or influenza. There may be vomiting, diarrhea, sweating, slight fever, rapid pulse, and mental dullness. There is often pain in the back or limbs, or at least a disinclination to be held or handled. Paralysis is by no means invariable, but may be the first symptom noticed. When present it occurs in a group of muscles, in one limb, or is more widely distributed. In cases without definite paralysis, weakness of muscles is common. The paralysis reaches its full extent immediately. In from one to six weeks there occurs a very marked and characteristic recovery from the paralysis and this may shortly become complete; if not, further improvement is slow, but may continue from 12 to 18 months.		2-3	5-6-7 ?-8	9-10-11-12	11-14	15-15-10	Withheld 18-17		Given 18-25	Two or three weeks after beginning of illness, unless temperature is not normal. 27-28		30-31	34-35-35-37	28		
CEREBRO-SPINAL MENINGITIS (Meningococcus)	Very variable. 1 to 25 days.	The disease usually begins suddenly, but there may be dizziness, prostration, feverishness or chilliness for one to twenty-four hours. In children, it often begins with a convulsion or vomiting; in adults, with a chill followed by headache, vomiting, dizziness, fever. Headache increases, backache appears. The muscles of the neck are stiff. Delirium, quiet or violent, is common. It usually gives place to stupor later. Cold sores are common. Rash, of which small, deep rose colored spots (which gives the disease its name of "spotted fever") are common in some epidemics; absent in others. The temperature pursues an irregular course and may be low even in severe cases. The disease is characterized by great irregularities in its course.		2	5-6-8	9-10-11-12	11-14	15-15-10	Withheld 18-19		Withheld 19-25	When clinically well, and after negative culture from well back in nose. 27-28		30-31-33	34-35-37	28		
DIPHTHERIA (Diphtheria Organism)	2 to 7 days. Usually about 2.	The onset may be insidious, with fever, headache, sore throat, foul breath and a feeling of indisposition. Children are apt to be drowsy. The pulse and respiration are increased in rapidity. The characteristic feature of the disease is a dirty gray membrane usually on the throat. If the windpipe is involved, there may be great difficulty in breathing; if the nose, there is apt to be a watery blood-tinged discharge. If antitoxin is given early, the membrane usually disappears in a day or two. Complications, which occur during convalescence, are weakness of the heart muscle or paralysis of other muscles, particularly those of the throat. The first is often fatal, the last rarely so.		2-4	5-5-7	9-10-11-12	11-14	15-15-10	Withheld 18-20		Withheld 18-25-25	When clinically well, and after two negative cultures taken not less than 24 hours apart. The first release culture will not be taken until 8 days after diagnosis culture. 27-28		30-31-33	34-35-37	28		
SCARLET FEVER (Organism Unknown)	1 to 10 days. Oftenest 2 to 4.	Headache, sore throat, high fever, rapid pulse; often vomiting; may have severe nervous symptoms. Submaxillary glands usually enlarged and tender. Duration 24 hours or less.	With the appearance of rash on the first or second day, the general symptoms increase. The rash is a bluish with small close-set intensely red spots, appearing on face, neck and upper chest. It travels downward, and involves entire body in 12 to 24 hours, avoiding the region of the mouth and nose. Disappears in 3 to 4 days.	2-4	5-5-7	9-10-11-12	11-14	15-15-10	Given 18	Withheld 18-21-22	Given 18	Given 18-25	After all discharge from nose, throat, ears and eyes have ceased and the patient is clinically well. 27-28	30	30-31	30-31-32	34-35-37	28
MEASLES (Organism Unknown)	7 to 18 days. Oftenest about 11.	Symptoms of a head cold; the eyes are red, watery and sensitive to light. There is a dry cough and moderate fever, sometimes vomiting. Duration 2 to 3 days. Most infectious in this stage	With the appearance of rash, about fourth day, the general symptoms become more severe. The rash is purplish red moderate sized spots which tend to form crescentic clusters. The spots are slightly elevated. They disappear in 3 to 4 days, leaving a slight stain.	2	5-5	10-11-12	11-14	15-15-10	Given 18	Withheld 18-17-22	Given		Five days after appearance of rash, if there is no inflammatory conditions of the nose, throat and ears, and the patient is clinically well. 27-29	30	30-31	30-31-32	34-35-37	28
GERMAN MEASLES (Organism Unknown)	1 to 2 weeks.	Absent or mild. May be slight sore throat, or watering of the eyes. Glands at back of neck are enlarged. Duration 2 to 3 days.	The rash may be the first indication of the disease; symptoms very mild or absent. The rash consists of small faded rose-colored spots appearing in regular order on face, trunk and extremities. It fades on face before appearing on legs. The enlargement of the glands persists during the eruption. Disappears in 2 to 3 days.	2	5	10							Three days after appearance of rash, if clinically well. 27-29				28	
WHOOPIING COUGH (Whooping Cough Organism)	7 to 10 days.	Symptoms of head cold and bronchial catarrh, the cough usually dry and often worse at night. Slight fever. Duration 7 to 10 days.	Characteristic "whooping" cough develops in about a fortnight and the spasm of coughing often ends in vomiting. The whooping stage may not develop or the characteristic paroxysms may be very few in number.	2	5	10-13							When clinically well. Patient is allowed on public thoroughfares two weeks after the beginning of the whooping stage, provided he wears on his arm a yellow band two inches wide with the letters "W. C." in black one inch high. 27-29				28	
SMALLPOX (Organism Not Definitely Identified)	10 to 14 days. Usually 11.	Always present. May be very slight. Often severe. Headache, vomiting, pain in back. Fever. Duration 3 days.	Symptoms abate with the appearance of the eruption, usually on fourth day. It is red, elevated, shot-like; develops from above downward. Involves entire body in 24 to 36 hours. On second or third day, a clear fluid appears in the spots, and in 2 or 3 days more this changes to matter and the spots are depressed in the center. These dry and drop in 15 to 24 days, leaving discoloration and scars.	2	5	9-10-11-12	11-14	15-15-10	Given 18-23	Withheld 24	Given 18-23	Withheld 24-18	When the crusts have completely separated. 27-28		30-31	30-31-32	34-35-37	28
CHICKENPOX (Organism Unknown)	7 to 13 days. Oftenest about 11.	Often not observed. Mild febrile symptoms. Duration a few hours to 1 day.	Eruption, often the first symptom, begins on second day as small deep pink pimples predominating on the back and chest. In about 24 hours they become filled with clear fluid which becomes matter. Later they dry and fall off. Successive crops may appear until about tenth day of rash	2	5	10							When the crusts have completely separated. 27-29				28	
MUMPS (Organism Unknown)	4 to 25 days.	Often not observed. May be an indisposition with fever.	The disease is characterized by swelling of the salivary glands. At first the swelling is slight, but within 48 hours is marked below in front of and behind the ear. The other side usually becomes affected in a day or two. There is slight pain. Inability to open the mouth interferes with the taking of food. The amount of saliva may be increased or diminished. The glands under the jaw may swell. The swelling persists 7 to 10 days.	2	5	10							When clinically well. 27-28	30	30-31	30-31-32	34-35-37	28

- (1) Only the most characteristic symptoms are mentioned; many of these may be absent and those present may vary extremely in intensity.

(2) Probably through the lymphatic tissue of mouth, throat, nose and pharynx.

(3) Possibly through the lymphatic tissue of the intestine.

(4) Sometimes by direct entry through the skin, as after an operation.

(5) By direct contact with patient or material just infected by patient.

(6) By direct contact with carrier or material just infected by carrier.

(7) Through food or drink infected by discharges of patients or carriers.

(8) Healthy carriers may be a more common cause of spread than actual cases.

(9) Unless complete isolation is possible in the home the patient will be removed to hospital.

(10) Excluded from school.

(11) Should not come in contact with other members of the household.

(12) The sick room should be screened against flies and other insects, any gaining admittance should be killed. Pets should be excluded.
- (13) Is allowed on public thoroughfares two weeks after the beginning of the whooping stage, provided he wears on his arm a yellow band two inches wide with the letters "W. C." in black one inch high.

(14) If the attendants, as for instance, a mother, cannot be relieved of the care of other children, she should invariably wash her hands immediately before or after leaving the sick room and should have a washable garment which she should remove before leaving the sick room.

(15) Exposed persons, except as provided under permits, should not mingle with the public.

(16) With symptoms should be isolated. After known exposure this may be made compulsory.

(17) May be given permits 14 days after the last exposure.

(18) If further contact can be avoided; as by complete isolation of patient, his removal to hospital, or death or the removal of a well person from the quarantined premises.

(19) May leave quarantined premises (if isolation has been complete) after a negative culture has been reported from well back in the nose, and then given permits; with negative culture permits may be given without removal from home if the patient is taken to hospital.
- (20) May be given permits after the report of a negative culture from the nose and throat.

(21) May be given permits ten days after the last exposure, if still free from disease.

(22) The presence of such children in a school should be reported to the School Medical Officer.

(23) May be given permits after disinfection of clothing (immunity secured either by having had the disease or from a successful vaccination within seven years).

(24) Must be vaccinated or held in quarantine for 14 days.

(25) Provided their work does not bring them in contact with children.

(26) Cultures are taken from nose. Permits are given pending report on culture. If positive are placed in quarantine.

(27) The patient should be bathed and hair washed.

(28) The premises will be disinfected and should then be cleaned as described under disinfection. (See page 480.)
- (29) The premises should be cleaned as described under disinfection. (See page 479.)

(30) When patient is released.

(31) If clinically well.

(32) If the incubation period of the disease has elapsed since the last exposure.

(33) Release cultures are taken from the nose and throat as in case of patient.

(34) Discharges should be destroyed. (See page 477.)

(35) Bed linen and outer garments of attendant should be boiled (See page 479.)

(36) The stools should be disinfected. (See page 480.)

(37) Anyone coming in close contact with the patient, as for instance the doctor or attendant, should wash his hands immediately before or after leaving the sick room.

(38) After recovery, removal or death from tuberculosis or erysipelas disinfection may be ordered if deemed advisable.

Health that they will not come in contact with the patient directly or indirectly. Permits shall be revoked if the conditions are not complied with.

The conditions under which permits may be given are fully stated in an appended table.

Disinfection During Disease. Under this heading and that of terminal disinfection, it should be noted that more stress is laid upon the destruction of contaminated materials and objects, and upon those measures employed by the careful housewife to keep her home immaculate than upon the application of chemical disinfectants, which, to the mind of most people comprises the whole process of disinfection. The greater stress here laid upon general cleanliness indicates its greater importance. Discharges from the throat, mouth and nose, and any discharge from the eyes, ears or suppurating glands in communicable disease so commonly contain the infectious organisms that they must be given special attention. They should be received on paper napkins, on pieces of gauze (cheesecloth), or on squares of soft cloth made from an old sheet or pillow case. The napkins and cloths should be burned as soon as soiled. If there is no fire in the sick room, these cloths may be received in a paper bag which can be removed from the room daily or oftener and burned with its contents. Toys and other objects which may have been contaminated by the patient should be destroyed or be boiled before being removed to any place where they might become possible sources of infection. Eating utensils are also carriers of infection and unless arrangements can be made to wash them in the sick room itself, they should be washed separately from the other dishes of the family and scalded in boiling water. Soiled clothing, bed linen, towels, etc., should be wrapped in a sheet wet with a disinfectant solution, carried from the room and placed in boiling water without being unwrapped.

The transmission of disease on the hands and clothing is also to be guarded against. Any one who is permitted to come in close contact with the patient, for example, the physician or nurse, should wash his hands immediately before or after leaving the sick room, and in scarlet fever and small-pox should wear a washable outer garment, which should not be removed from the room except as provided for soiled bed linen. The attendant should wear only such clothing as can be washed and boiled and they should not

come in contact with other members of the family, especially children, without first changing the clothing and washing the hands and face.

The discharges from the bowels and bladder should be received in a vessel containing a quart or more of disinfectant solution in cases of infantile paralysis, typhoid fever, dysentery and cholera.

Release of Patients and Attendants from Quarantine. In general terms, the patient and his attendants may be released from quarantine when the former is clinically well, when the incubation period for non-immunes has passed and when the premises have been suitably disinfected. The details with reference to the various diseases are given in the appended table.

Directions for Disinfection to End Quarantine. Disinfection is of much less importance than the control of persons who harbor the germs of disease, but a thorough cleaning of the entire area of isolation should be performed whenever a case is released from quarantine. This cleaning should consist in scrubbing with soap and water all woodwork or furniture which can be reached by persons in the room. There is no necessity for washing ceilings or the upper part of high walls. As far as possible, a sick room should not contain upholstered furniture, carpets and hangings, but if such objects are present in the room, they should either be exposed to the effects of sunlight and drying for several days, or fumigated.

As a protection to those who will carry out the proper cleaning of the sick room, disinfection with formaldehyde gas, in the presence of water vapor, will be performed by the Division of Health under certain conditions. After twelve hours, the room should be opened and aired, and if the remaining formaldehyde gas is oppressive, a little ammonia should be sprayed in the air. The room should then be thoroughly cleaned. Formaldehyde disinfection will be performed by the Division of Health after small-pox and infantile paralysis before the premises are cleaned and released from quarantine. Similar disinfection will be performed after scarlet fever, cerebro-spinal meningitis and diphtheria if the patient dies or is removed from the house during the acute attack, and may be ordered by the Division of Health after scarlet fever, cerebro-spinal meningitis, diphtheria, tuberculosis and erysipelas when conditions make such disinfection advisable.

ACIDOSIS IN DIABETES AND NEPHRITIS

BY C. D. CHRISTIE, M. D.

CLEVELAND

The mechanism by which the various regulatory processes of the body are accomplished have long served as sources of great amazement to workers in science. This refers alike to the order of things which maintains such a perfect balance in the blood volume, and its molecular concentration, but more especially to the mechanism by which neutrality of the body is maintained. The balance between alkali intake and acid formation and excretion in health is so perfectly accomplished that it is doubtful whether methods of sufficient accuracy will ever be devised to detect the slight changes which must take place in the blood. Comparatively recent developments in science have succeeded in placing the question of the regulation of neutrality and the effect which slight changes play upon an experimental basis but to say that the riddle is solved beyond this point would be an exaggeration.

We are well aware that as metabolism proceeds acids are constantly being formed and delivered to the blood for excretion. The acids may be divided into the volatile and the non-volatile. Carbon dioxide is the volatile acid which is formed as an end combustion product of fats, protein and carbohydrate. This acid is constantly being given off by the lungs. The essential non-volatile acids are those derived from the sulphur in protein and the phosphorus in nucleo-proteins forming sulphuric and phosphoric acids.

In addition to these inorganic acids certain organic acids are formed but play a minor role, except in conditions where the tissues are undergoing carbohydrate starvation; under such conditions they may be excreted in very large amounts. The non-volatile acids are constantly being excreted by the kidneys.

With the constant formation of acids there must be a regulated supply of alkali to the blood to keep it at or near neutrality limits. Sodium ions are taken in the food and they represent the chief source of the alkaline supply to the body. The ammonia which is formed from proteins is made use of in neutralizing acids. In addition we have the interchanging of other salts in the blood from acids to alkalis depending upon the exigency of the circumstance and also the role of the little understood amphoteric proteins. Finally

then the mechanism by which neutrality is maintained in the body may be summed up briefly. (1) Acids formed by metabolism with excretion of the volatile ones through the lungs and the excretion of non-volatile acids or alkalis through the kidneys. (2) Ingestion of sodium ions, the production of ammonia, the interchanging composition of the salts and the role of amphoteric proteins.

With this meagre idea of the changes which are taking place in the blood, so that neutrality may be maintained in the healthy body, it is possible to gain some idea of the pathological alterations which are necessary to give rise to the condition we term acidosis. The conditions which would seem the most likely to give rise to this abnormal state are: (1) Prolonged feeding of acids with a final exhaustion of the body's storehouse of alkaline material; (2) Any condition where the tissues are denied carbohydrate for combustion and are forced to live upon a diet made up solely of proteins and fats. Such a state of affairs will produce in the body ideal conditions for the excessive formation of acetone, diacetic and betaoxybutyric acid; (3) Any pathological process which impaired or destroyed the permeability of the epithelium of the tubules of the kidney to the excretion of non-volatile acids; (4) Alterations in the circulation through the lungs or impairment in the respiratory membrane which would greatly interfere with or inhibit the excretion of carbondioxide.

The role which an increase in the hydrogen-ions in the blood plays in pathological processes is little understood. All kinds of clinical manifestations have been rather lightly attributed to the condition. It is much easier to postulate that a certain phenomena is due to acidosis than it is to satisfactorily demonstrate its actual existences. As I tried to make plain in the beginning and want to again emphasize that there are no methods which are infallible or no pathonogmonic signs to assist us in determining slight changes in the acid-base equilibrium.

Of course very gross changes we can determine but to have a composite idea of what is actually transpiring in the tissues and leading up to the alterations is largely supposition.

Undoubtedly the most sensitive index which we have to slight increases of hydrogen-ions in the blood is the respiratory center. Small additions of acid to the blood stimulates the respiratory center to increased activity and will thereby greatly activate pulmonary ventilation, giving rise to the condition of hyperapnea. However, this manifestation of the respiratory center to an increase of the

hydrogen-ions in the blood can hardly be considered as a specific sign of acidosis. Other factors can doubtlessly produce the same phenomena. Certainly we see instances of a great increase in the respiratory ventilation without a demonstrable acidosis and on the other hand there are instances of demonstrable acidosis without a well marked hyperapnea. Certainly hyperapnea and varying degrees of coma are the only objective clinical phenomena of an increase in the acidity of the blood with which we are now familiar, but let me again emphasize that these manifestations are not peculiar to the condition. However, a better understanding of the various factors concerned may show that hyperapnea and coma are more often due to increased acidity in the blood than we now believe.

Doubtless the most common forms of acidosis with which we meet in the clinic are those due to the body tissues undergoing carbohydrate starvation with the coincident increase in the formation of acid bodies; and the form which is due to impairment in the ability of the epithelium of the tubules of the kidneys to excrete either the acids formed normally or those which are formed under the abnormal conditions of carbohydrate starvation.

Acetone diacetic and beta oxybutyric acids in the urine are indices that the tissues are undergoing carbohydrate starvation. If an individual be starved completely for two or three days these ketone bodies will appear in the urine and if the starvation be continued there will be a demonstrable acidosis developing. This is due to the fact that there is only a limited amount of carbohydrate stored in the body and it is very soon exhausted and the tissues are then forced to live upon a diet of fat and protein which are the precursors of acid bodies. The acidosis which develops is usually mild because the production of ketone bodies is reduced to the minimum, because metabolism is reduced to the minimum, and only that portion of the body's store house of protein and fat is being used up which is absolutely necessary to maintain the body heat. However, if this same starving individual suddenly be fed on a diet containing only fat and protein in goodly amounts it is apparent that the acidosis which will develop will be of much greater severity, because the metabolism of these precursors of ketone bodies will be greatly increased and consequently a much greater formation.

It is exactly this latter type of acidosis which is encountered in the diabetic. They may be eating a general diet, but since they are unable to utilize carbohydrate it is apparent that they are living

upon a diet composed of fat and protein and are as a result producing large quantities of acid bodies. All degrees of this form of acidosis are encountered. We frequently see the diabetic who is not excreting acid bodies. It means one of two things, either this individual is utilizing enough carbohydrate to keep down the formation of acid bodies or is piling them up in the blood without any appearing in the urine, hardly the latter.

Very frequently we find patients excreting rather large quantities of ketone bodies and when the reserve alkalinity of the blood is measured it is found to be quite normal. I have at present several of such observations upon patients. This can obviously be explained by the fact that the patients were having a rapid excretion of the acid bodies through the kidneys and rather small demands were being made upon the reserve alkali.

On the other hand I have a few observations where the acid excretion in the urine was not materially different than in some of the cases just referred to but in this group there was a marked lowering of the alkaline reserve in the blood. The obvious explanation here is that the kidneys are not allowing the acid to be excreted and it is being piled up in the blood. Estimations if they had been made would have shown much larger amounts of ketone bodies in the blood of these patients than it would have been in the individuals with competent kidneys.

With the diabetic patients, if their kidneys be competent to excrete acid bodies, which they usually are, the only form of treatment that is necessary is the withdrawal of all food. By so doing the excess of sugar in the blood will disappear, metabolism will be reduced to the least level and by the same token the formation of the abnormal acid bodies will be reduced to the least level. In time there will be a gradual return of the ability of the body to utilize carbohydrates. Alkali may be administered by the mouth in the form of sodium bicarbonate, as it supplies exhausted alkali and guards against further exhaustion taking place in the blood. With the disappearance of the sugar from the urine, the gradual resumption of carbohydrate and with an improvement in the tolerance of the body to this food the last traces of these abnormal acids will vanish from the urine.

What I wish to impress is that the excretion of acetone, diacetic and beta oxbutyric acids are so far as we know always present in the urine of patients whose tissues are undergoing carbohydrate

starvation, but their presences in the urine does not necessarily indicate any particular exhaustion of the alkaline reserve. Applying the term acidosis to every clinical condition where there happens to be acetone in the urine is exactly as fallacious as calling every patient a nephritic whose urine shows albumin.

I will speak only briefly of the acidosis which we frequently encounter in patients suffering from some form of kidney lesions. As was said earlier in the paper the kidneys are the chief channels for the excretion of non-volatile acids which are normally being formed in the body. The chief normal non-volatile acids are phosphoric and sulphuric. It has been recently shown by Marriot and Howland that there is an abnormal accumulation of phosphates in the blood in patients with an acidosis in the course of a nephritis. This accumulation of acid phosphates runs very closely parallel to the severity of the acidosis. However there undoubtedly are other factors entering in and a quantitative measurement of the phosphates in the blood would not give in all instances an accurate index of the degree of acidity. Doubtless it will only be a short time until there will be quantitative studies of sulphates in the blood and the results will in all probability parallel those of the phosphates in nephritic acidosis.

I have made about seventy determinations upon the blood of patients afflicted with varying degrees of nephritis for acidosis. I have used the methods of determining the carbon dioxide tension in the alveolar air and the volume of carbon dioxide in the blood and at the same time have attempted to correlate the results obtained by the use of the so-called Sellards test in some of the patients. In addition on all of these patients either Doctor Dennison or myself have estimated the total non-protein nitrogen or the urea content of the blood. From these results we are able to say that not all patients having incompetent kidneys for the excretion of nitrogen show the same incompetency for the excretion of acids. However, in many instances this is the case as would rather be expected. Usually if there is a high degree of accumulation of non-protein nitrogen in the blood there is at the same time some lowering of the alkaline reserve of the blood. Very frequently mild accumulations of non-protein nitrogen is encountered with a normal alkaline reserve. Instances also in our series of observations show that there may be no accumulation of non-protein nitrogen in the blood of nephritics but at the same time very marked lowering of

the alkaline reserve. When we analyze these results and compare them with what we think we know of the function of the epithelium of the tubules of the kidney at various levels they do not appear inconsistent. We believe water and salt to escape through the glomeruli, urea and other non-nitrogenous substances through the descending portions of the tubules and that phosphates and sulphates are excreted through the ascending portions of the tubules. It is not inconceivable that if these localizations are even partially correct the apparently inconsistent figures which we have obtained may not after all be so divergent from the actual conditions of affairs. Instead they are simply indications of a severe lesion in one or the other portion of the tubules. However, I would not want to leave the impression with you that the cases could be analyzed entirely correctly in any such a manner for I am well aware that they cannot. Certainly there are other unexplained complicating factors, as increased protein metabolism from infections, etc.

At any rate varying degrees of acidosis are encountered very frequently in nephritis. Usually they are only of moderate severity and are largely due to phosphate and sulphate retention. Occasionally it may become of severe degree with complicating factors. It is usually present in uraemia but it doubtless plays a small part in the phenomena. Rarely do the nephritic patients with their mild acidosis suffer any outward unpleasant symptoms. Proof of this is the application of the Sellard test to them which at the same time cures the condition without in any way altering the course of the patient. After the sodium bicarbonate is discontinued there usually is a fairly prompt return of the condition.

Another type of acidosis which may be of service eventually in the explanation of certain clinical phenomena is that due to the impaired elimination of the volatile acid carbon dioxide through the lungs. Experimental work hardly advanced far enough with this phase of the subject to allow us to speak with any degree of certainty. However, I think one is justified in assuming that carbon dioxide acidosis as seen in various conditions as in chronic hearts with decompensation does play a part in the disturbance of respiration which we see.

Finally in closing let me again emphasize that demonstrable acidosis is not a common clinical manifestation even in the patients that we see on a medical ward where conditions have been ideal for the production. This to me is simply another evidence of the fine

adjustment of the mechanism by which the acid base equilibrium is kept constant at all hazards. That acidosis does in all probability contribute to some hitherto unexplained clinical manifestations, is in all probability true but for the condition to assume responsibility for all of the various manifestations which have been attributed to it, is hardly conceivable.

EPIDEMIOLOGY OF WHOOPING COUGH IN CLEVELAND FOR 1915 AND 1916

BY G. E. HARMON AND MEMBERS OF THE THIRD YEAR CLASS IN
HYGIENE*

From the Laboratory of Hygiene, Western Reserve School of Medicine.

The publication of a paper in the whooping cough series for 1915 was not practicable, so that the work done in this connection for both 1915 and 1916 is here brought together. In 1916 the data are complete as far as they go, but owing to accident at the time the city records were removed from the old to the new City Hall, the quarantine cards for the first four months of 1916 were lost, so that analysis of the cases by sex and age for this year refers only to the last eight months. It has, however, been possible to obtain the total incidence for each of the first four months, and so, of course, the total number of cases for the entire year. The cases therefore which it has been possible to subject to a sex and age analysis will form a definite percentage of the total. We appreciate that it is unfortunate that these incomplete papers should be necessary, but feel that it is better to bring them forward for what they are worth under the proper limitations.

Sources of Information.—The cases are investigated by the sanitary officers of the Health Department, each case being recorded on a separate card. They are filed at the Health Department, and by the courtesy of that department are made accessible to the students, who make the necessary tabulations.

For comparative records from other places, the last available reports are used, as well as the reports of the Bureau of Census.

*The work was done for 1915 by W. H. Wright and for 1916 by J. W. West and W. M. Ankeny.

MONTHLY INCIDENCE FOR 1906-1916.

	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	Ave.	Ave. %
Jan.	32	36	75	109	15	126	46	62	28	39	49	56.0	6.8
Feb.	53	95	109	93	16	220	37	110	41	72	72	83.4	10.1
Mar.	49	61	107	103	36	332	48	82	58	110	78	96.7	11.7
April	54	100	62	58	47	269	56	158	89	153	80	102.3	12.4
May	83	89	61	50	36	228	45	129	61	155	85	92.9	11.2
June	53	72	104	54	49	158	63	107	77	153	52	85.6	10.3
July	84	117	85	17	57	85	75	118	90	192	75	90.4	11.0
Aug.	32	123	78	7	94	41	60	63	58	131	85	70.2	8.5
Sept.	19	61	39	25	42	25	29	34	21	70	48	37.5	4.7
Oct.	21	71	12	36	13	18	48	36	20	51	16	31.0	3.8
Nov.	55	46	34	29	23	19	50	22	29	35	21	33.0	4.0
Dec.	29	74	39	71	42	37	50	52	32	40	35	45.5	5.5
Total	564	945	805	652	470	1,558	607	973	604	1,201	696	825 69	100

This table shows very clearly that, as a rule, for the last ten years the disease in Cleveland has had its greatest incidence in the winter, spring and early summer. It will be seen from the table that the height of the epidemic for 1915 and 1916 occurred as usual during the spring.

INCIDENCE AND MORTALITY.

Ages	Male Cases		Female Cases		Total Cases		Total Deaths		Mortality %	
	1915	1916*	1915	1916*	1915	1916*	1915	1916*	1915	1916*
Under 1 yr.....	102	42	93	31	195	73	35	8	18.0	10.9
1-2	85	19	99	33	184	52	20	4	10.9	7.7
2-3	76	24	96	38	172	62	12	2	7.0	3.2
3-4	74	25	70	27	144	52	2	1	1.4	1.9
4-5	56	26	64	22	120	48	4	1	3.3	2.0
5-6	60	20	68	29	128	49	1	0	0.7	0
6-7	45	15	45	21	90	36	0	0	0	0
7-9 (inc.).....	77	15	62	23	139	38	2	0	1.4	0
10-14 (inc.).....	9	3	9	2	18	5	0	0	0	0
15	0	0	1	0	1	0	0	0	0	0
16-17	0	0	0	0	0	0	0	0	0	0
17-19 (inc.).....	0	0	1	0	1	0	0	0	0	0
20-24	0	0	2	0	2	0	1	0	50.0	0
25-29	0	0	4	0	4	0	0	0	0	0
30-34	1	0	5	0	6	0	0	0	0	0
35-39	1	0	0	2	1	2	0	0	0	0
Total .	586	189	619	228	1,205	417	77	16	6.4	3.8

*The numbers recorded for 1916 are for the eight months from May 1 to December 31.

From the above table it will be seen that in 1915 the percentage mortality for the first year of life is 18.0, as compared with 28.4 in

1913 and 23.8 in 1914. For the second year of life the figures are 10.9, as compared with 12.8 in 1913 and 14.1 in 1914. All deaths but three occurred in children under school age. One death was that of a female seven years of age, another of a male eight years of age, and the third occurred in the case of a male 22 years of age.

In 1916 the percentage mortality for the first year shows a further drop to 10.9, though it must be remembered that this deals with only 66 1/3 per cent of the total incidence, or 59 per cent of the total mortality. The correspondence of these figures for incidence and mortality suggests, however, that the rate is a fair estimate of the year's total. All deaths occurred in children under school age except one in the 7-9 period.

COMPLICATIONS.

The following table shows the complications which occurred in those cases which resulted fatally.

Disease	Total Deaths		Per Cent		Males		Females		Under 1 Yr.		1 Yr. & Over	
	1915	1916	1915	1916	1915	1916	1915	1916	1915	1916	1915	1916
Broncho-pneumonia	35	18	45.4	46.2	16	10	19	8	13	9	22	9
Lobar Pneumonia.....	11		14.3		3		8		3		8	
Acute Bronchitis.....	4	1	5.2	2.5	3	0	1	1	2	0	2	1
Convulsions	4	4	5.2	10.2	2	1	2	3	1	2	3	2
Gastro-enteritis	3	3	3.9	7.8	2	1	1	3	2	1	1	2
Marasmus	2		2.6		0		2		2		0	
Cerebral Meningitis	2	1	2.6	2.5	2	0	0	1	0	0	2	1
Spasms	1		1.3		1		0		1		0	
Pulmonary Edema....	1		1.3		1		0		1		0	
General Anemia.....	1		1.3		0		1		0		1	
Measles	1		1.3		1		0		1		0	
Heat Prostration.....	1		1.3		1		0		1		0	
Acute Dilation of Heart	1		1.3		1		0		1		0	
No Complications....	10	12	13.0	30.8	5	8	5	4	8	6	2	6
Total	77	39			38	20	39	19	36	18	41	21

It will be noted that broncho- and lobar pneumonia were the most frequent complications for 1915. In 1916 broncho-pneumonia and convulsions were the most frequent complications. It will also be observed that in 1916 a much larger percentage of fatal cases had complications than in 1915. This table also presents evidence to show that complications are of about the same frequency in males and females. For both years the percentage of the cases having complications is slightly greater in the group of those over one year of age.

COMPARISON WITH OTHER YEARS.

Year	Deaths From All Causes	Deaths From W. C.	Estimated Population	W. C. Per Cent of All Deaths	Death Rate of W. C. per 100,000 Populat'r
1900	6,104	24	383,000	0.394	6.3
1901	5,834	11	398,000	0.189	2.8
1902	6,134	34	413,000	0.555	8.2
1903	6,799	45	429,000	0.662	10.5
1904	6,476	7	445,000	0.108	1.6
1905	6,424	24	476,000	0.374	5.0
1906	7,355	41	494,000	0.558	8.3
1907	7,678	36	609,000	0.469	7.1
1908	7,177	22	524,000	0.307	4.2
1909	7,032	29	539,000	0.413	5.4
1910	8,034	38	564,000	0.474	6.7
1911	7,967	87	580,000	1.090	15.0
1912	8,149	36	596,000	0.442	6.0
1913	8,842	69	622,000	0.782	11.0
1914	8,266	40	639,000	0.484	6.2
1915	8,841	77	657,000	0.870	11.7
1916	9,987	39	674,000	0.391	5.8

The average death rate for the period 1900-1916 for whooping cough was 7.1 per 100,000 population. The rate for 1915 was above, while that for 1916 was below that figure. The average death rate for the first five years of the period was 5.8. For the last five years it was 8.0. These figures tend to show that the mortality from whooping cough has not been markedly reduced in Cleveland in recent years.

Comparison With Other Cities.

The following table giving death rates from whooping cough per 100,000 inhabitants is presented so that a comparison may be made between Cleveland and some of the other American cities with a population over 500,000:

	1906-10	1911	1912	1913	1914	1915	1916	Average 1911-1916
Baltimore	15.1	8.1	7.5	7.1	15.5	3.6	10.7	8.7
Boston	11.2	15.6	10.4	13.2	6.7	10.2	9.8	10.9
Cleveland	6.5	15.0	6.0	11.0	6.2	11.7	5.8	9.3
Detroit	16.4	5.5	15.9	19.2	15.6	13.3		
New York.....	7.0	8.7	5.0	7.8	5.2	7.3	6.2	6.7
Pittsburgh	18.4	18.8	10.4	15.4	9.0	7.5	18.7	13.3
St. Louis.....	5.7	4.1	7.7	3.0	9.6	4.1	8.2	6.1

The above table also brings out the fact that the mortality from whooping cough has not been reduced in Cleveland. For the other

cities, except St. Louis, there has been a lowering of the mortality. The table also shows that St. Louis, New York and Baltimore have had a lower rate in recent years than Cleveland. For the period 1906-10 Cleveland stood second, while for 1911-16 it is fourth.

Summary.

	1915	1916
Total cases	1,201	696
Incidence per 100,000.....	182	103
Total deaths	77.0	39
Mortality per 100,000.....	11.7	5.8
Percentage mortality under school age.....	7.84	4.8*
“ “ during school age.....	0.80	0.0*
“ “ over “ “	7.2	0. *
“ “ in males	6.50	4.8*
“ “ in females	6.30	3.1*
Total incidence among those of school age.	248.00	79.0*
Incidence per 1,000 of those of school age.....	0.37	

*It must be remembered that the 1916 figures for age and sex are for only eight months of the year.

THE CLINICAL FORMS OF NERVOUSNESS

BY ARTHUR R. TIMME, M. D.

Assistant Physician, Cleveland State Hospital

There are few things more interesting than to observe in a systematic manner the complaints of patients; one finds a single complaint common to many diseases as well as a single disease presenting diverse complaints in different patients. Thus a localized pain, a cough, dyspnea, nausea, etc., may be complained of in a variety of afflictions.

In one's clinical experience in nervous and mental disease, there is perhaps no complaint encountered more frequently than that of "nervousness." Anybody, from a feeble-minded child to a trembling old senile, may be classified as "nervous" by the laity. Indeed, occasionally conditions which have not the least resemblance to a physician's conception of nervousness are called such in every-day life; for instance, a man with dementia precox, who presented no other symptoms than "talking to himself" was said to be "only nervous" by a relative. But such cases are rare and resemble that of the negress whose complaint of stomach trouble proved to refer to a gonorrheal vaginitis.

Of 76 cases of mental disease studied personally at the Boston Psychopathic Hospital, 41 presented "nervousness" as a complaint or symptom. These were distributed as follows:

- 7 instances in 20 cases of dementia precox.
- 8 instances in 11 cases of manic-depressive insanity.
- 4 instances in 9 cases of arteriosclerotic dementia.
- 7 instances in 8 cases of alcoholic psychoses, including delirium tremens.
- 4 instances in 5 cases of presenile psychoses.
- 3 instances in 5 cases of general paresis.
- 2 instances in 5 cases of feeble-mindedness.
- 3 instances in 3 cases of psychoneuroses.
- 2 instances in 3 cases of paranoid states.
- 1 instance in 3 cases of epileptic dementia.

In organic and functional nervous disease the ratio is also very high. This is true especially of cases coming into an out-patient department.

The word "nervous" is derived from the Latin *nervosus*, meaning full of sinew or strength; and the original English meaning of the word is found to be "sinewy." Various derived and obsolete meanings are "strong," "vigorous," "forcible," "spirited." The modern slang term "nerve" (audacity or boldness) seems to bear a relation to the more original meanings. But "nervous" is used today in a sense apparently not related to the above, namely as, "having the nerves weak, diseased, or easily excited; subject to or suffering from undue excitement of the nerves; easily agitated or annoyed; excitable; hence, timid; fearful; apprehensive" (Webster's Dictionary). It is in these senses that the word is generally used today, with the exception of the scientific meaning of "pertaining to the nerves or nervous system."

When a patient complains of "nervousness," what does he mean? Wide and vague as its use at first may seem, "nervousness," in its more intelligent conception, is found as a complaint in a well-defined though large group of conditions. On analysis, these cases can be shown to have a nervous system which is, (a) in a state of active irritation, or (b) passively hyperirritable or "labile."

Tremors

Active irritation of the nervous system may be (1) motor, (2) psychomotor or psychic. Cases manifesting motor irritation comprise largely the great group of tremors. A tremor is an involun-

tary, rhythmical movement of small range, occurring in a group of muscles and showing reciprocal or coordinate involvement of both agonists and antagonists. Tremors are fine or coarse in range or size of oscillations, rapid or slow in rate of oscillations per second; fine tremors are usually rapid, slow tremors are usually coarse. Some tremors are lessened by voluntary movement, others increased; a tremor increased by voluntary movement is spoken of as an "intention tremor." In this discussion, the site of a tremor is important, because a tremor must force itself upon a patient's attention if it is to be given as a major symptom or complaint. For instance, a tremor of the head is quite noticeable to a patient or his friends, as is a tremor of the hands when he attempts to write, etc.

Prominent among conditions in which tremor is complained of as nervousness are alcoholic toxic states. Here the tremor affects mainly the hands. It is most marked in delirium tremens, but these individuals are rarely clear enough to make a complaint. Cases of alcoholic hallucinatory and paranoic states frequently show a tremor less marked than that of delirium tremens, but plainly visible with hands outstretched and fingers spread. Practically all cases of chronic alcoholism have a tremor of the hands; in many it is visible only when a sheet of paper is laid across the extended hands and fingers; in others it is latent and can be detected as Quinquaut's sign (a grating or crepitation felt when the outstretched fingers are held against the examiner's palm). Alcoholic tremors vary in quality, i. e., range and rate; the most coarse are found in cases of delirium tremens, the finer ones appearing in chronic alcoholics.

In Basedow's disease a fine tremor of the hands is often an early symptom, and in a few cases is noticeable enough to the patient to be given as a complaint. More often the general restlessness and anxiety found in these cases are complained of as nervousness; the tremor becomes noticeable only on examination. Excitement may increase the tremor and cause it to become coarser (Barker).

Senility produces another fairly large group of cases manifesting tremor. A senile tremor is coarse and slow. The muscles of the neck are affected at least as often as those of the hand, and give a peculiar shaking motion to the head. The trembling of the senile's hand as he holds his cane is a well-known picture often reproduced on the stage. Excitement and activity also tend to increase a senile tremor.

Similar is the tremor of paralysis agitans or shaking palsy. The hands are affected earlier and oftener than the head and neck. The legs also frequently involved. In this disease the tremor is coarse and slow, the number of oscillations rarely exceeding four or five per second. The hand tremor is characteristic of the disease; it is best described as a pill-rolling motion of the fingers against the thumb. Rhythmical movements occur at the wrist and frequently at the elbow. The tremor is constant during rest and in all positions, but activation of the muscles involved usually inhibits the tremor for a few seconds. When this activation is prolonged, as in writing, the tremor returns and its intensity may be increased.

In certain conditions, mainly multiple sclerosis, tremor of the hands and arms occurs during voluntary movements. This is called "intention tremor." During rest the tremor may be absent or only very slight. When fully established the tremor consists of wide and slow oscillations. It is best elicited by having the patient slowly bring the tip of his finger to his nose; the tremor becomes progressively more marked. It is quite impossible for some patients to raise a glass of water to their lips and drink, due to this marked intention tremor.

In cerebral syphilis tremor is frequently met with, but its quality, location, duration, etc., are very inconstant. In its most constant form it is found in general paresis. The facial and lingual muscles are most often involved. During activation, as in showing the teeth, the facial muscles are seen to tremble, as does the tongue on protrusion. Tremor of the hands, either coarse or fine, is seen fairly frequently in cases of paresis. This gives a certain tremulousness to the writing in connection with the characteristic irregularity of paretic handwriting.

Tremor in hysteria may simulate any of the above forms. It may range from fine vibrations to large and slow oscillations, and may affect head, arms, legs, or either side of the body. A tremor can frequently be detected in neurasthenics when told to extend hands and fingers. It is fine and vibratory in character. However, the neurasthenic has cause other than tremor to complain of nervousness.

Finally, we find tremor of the hands in cases of exhaustion. Under this head can be included the tremor seen after severe physical exertion or mental shock, in cases of emaciation, and after severe

or prolonged disease. It is a fine rather than coarse tremor, most noticeable during voluntary motion, and usually disappears when the patient's normal condition is restored.

Chorea

Other forms of nervousness produced by motor irritation of the nervous system are chorea, athetosis, and tics. Choreic movements are short and quick, irregular, poorly coordinated, and purposeless. They involve almost any muscle or group of muscles, and interfere with voluntary movement. Two classical forms of chorea have been described, Sydenham's and Huntington's. Sydenham's form occurs more often in children. It is as a rule associated with a history or presence of tonsillitis, rheumatism, and endocarditis—the so-called St. Vitus' dance. The nervous child that is brought to the doctor or dispensary is often a mild case of chorea. The following points are practically diagnostic of such cases: History of sore throat; voluntary movements performed in a jerky manner, e. g., when told to take a glass of water, after slight hesitation the child suddenly reaches toward the object and may hesitate again before finally seizing it; intermittency of grasp, i. e., irregularity of pressure observed when the child is attempting to squeeze the examiner's fingers, one in each hand; slight adiadochokinesis, or inability to alternately pronate and supinate the extended hands quickly and smoothly.

The other form of chorea, that of Huntington, occurs later in life, is hereditary, and is finally accompanied by progressive dementia. The movements may be identical with those of Sydenham's chorea, both in character and extent of involvement. The patient, however, is found to be past middle life; similar conditions of "nervousness" are said to have occurred in a parent or grandparent; a dementia similar to that of senility completes the picture.

Athetosis

In athetosis the movements differ from those of chorea considerably. They are slower, more purposeful, better coordinated, continuous. Hands, fingers, and toes are chiefly involved. The motions have been described as wormlike. Sometimes a history of encephalitis in infancy is obtainable.

Tics

Tics and habit-spasms frequently give rise to a complaint of "nervousness." Barker defines a tic as "reflex movement, an expressive movement, or a defensive movement that has become an

imperative movement". The impulse to move the part affected is irresistible. Frequently it is the winking of an eye, the shrugging of the nose or shoulder, protruding the lips, or clenching the fist that is continually and irresistibly repeated to become a tic or habit-spasm. For example, an hysterical patient was lightly struck over the left eye by a protruding plank from a lumber-wagon, and developed almost continuous winking of the left eyelid.

Occasionally on further questioning of a patient who complains of "nervousness" one learns that he is suffering from convulsions. These must be classified under conditions of motor irritation. For our purpose here, it is sufficient to bear in mind the main types of convulsions and the more common conditions in which they occur.

Convulsions

Convulsions are pathological muscular contractions involving a whole limb or a greater part of the body, due to more or less violent motor discharge. Continuous contractions are termed "tonic" convulsions, intermittent contractions "clonic." The more extensive convulsions are usually accompanied by unconsciousness.

Epilepsy is the most common cause of convulsions, in cases other than infants, brought to the physician's notice. Epileptic convulsions may occur at any age. They vary in extent and intensity. The more severe attacks of general convulsions with unconsciousness are termed *grand mal*, the lighter attacks of unconsciousness without convulsions are called *petit mal*. One must distinguish between idiopathic epilepsy, in which the cause cannot be determined, and Jacksonian epilepsy due to circumscribed irritation or lesion of the cortex. In the latter the convulsions are more apt to be localized and consciousness may not be lost.

Convulsions in babes may be evidence of the so-called spasmophilic diathesis.

Alcoholics may have convulsions identical with those of epilepsy. These occur during or after a drinking-bout. They are known as alcoholic epilepsy or "rum fit."

Reflex convulsions, more common in children, may result from peripheral irritation, as in phimosis, intestinal irritation by parasites, etc. These may simulate the spasms of epilepsy.

Actual brain disease, *e. g.*, general paresis, tumor, cerebral hemorrhage, arteriosclerosis with thrombosis, etc., may produce local or general convulsions. The general convulsions simulate those of epilepsy, being accompanied by unconsciousness.

Hysteria and other psychoneuroses are often accompanied by convulsions. Here the loss of consciousness is more apparent than real; the patient manages to fall so as not to hurt her or himself, and also reacts to external stimuli. Pure tonic or clonic contractions may be intermingled with attitudes and gestures.

Heart lesions which can produce either a sudden anemia of the brain or a cerebral embolus must be borne in mind in seeking for the cause of convulsions.

Finally, epileptiform convulsions are seen in the catatonic variety of dementia precox.

We must next consider conditions of nervousness in which the nervous system is in a state of irritation, but with psychic rather than motor manifestations. In this class are found the cases that exhibit restlessness, flight of ideas, and insomnia. These three conditions are somewhat closely related.

Restlessness

Restlessness is a common symptom in many diseases. At times we can differentiate two forms, the inner or psychic and the outer or motor, although the two usually occur together. The main characteristic of inner restlessness is an inability to concentrate or to make persistent effort in any one direction. This condition may be due to rapid mental fatigue or to distractibility. It is found in neurasthenia, psychasthenia, hysteria, and in certain organic conditions, such as Basedow's disease, chronic nephritis, early general paresis, and even in the early stages of syphilis.* Furthermore, manic phases of manic-repressive insanity are characterized by a marked restlessness both inner and outer; this applies especially to the so-called hypomania, a condition just short of the excited manic phase. It is distractibility rather than mental fatigue that characterizes the restlessness of manic cases. Outer or motor restlessness is usually dependent upon or occurring with the inner form. It is characterized by an inability to sit quietly for more than a few minutes, or to lie quietly in bed. Besides occurring in the above conditions of inner restlessness, it is found in conditions of pain and general discomfort.

*A. M. Barrett has recently published a series of cases which showed symptoms of manic-depressive insanity in connection with positive syphilitic findings in the blood and spinal fluid. He concluded that these were to be called true manic-depressive psychoses. I have been able to verify this syndrome in at least three cases.

Closely related to restlessness is the "pressure of activity" seen in mild manics or hypomanics, even between the attacks. This is expressed in many ways. Only recently a typical hypomaniac gave a history of globe-trotting. Frequent changes of occupation, excessive letter-writing, strange business ventures, marked talkativeness, aggressiveness, pugnacity, are a few of the manifestations of this condition. When outside an institution, these individuals frequently collide with the rights of others, become known as trouble-makers, commit alcoholic and sexual excesses. An illustrative case is that of a prominent business-man, undoubtedly a hypomaniac, who was found to have wives in Cleveland, Boston, and London; his brother and maternal aunt are typical manics in this hospital.

Flight of Ideas

Flight of ideas, related to the inner form of restlessness or distractibility, is often complained of as nervousness. It occurs chiefly in manics, occasionally in paretics. In this condition numbers of ideas, related or not, present themselves to consciousness in rapid succession and clamor, as it were, for expression—a psychomotor activity. In cases in which flight of ideas is not too marked and the patient has sufficient insight, he will invariably say, "My mind is too full of thoughts, I cannot think or sleep."

Insomnia

Insomnia or sleeplessness frequently brings a patient to the doctor or dispensary, asking to be treated for nervousness. Insomnia is usually found to be caused by some irritation of the cerebrum, reflex or direct. Reflex causes are pain, gastro-intestinal irritation, and general bodily discomfort. Direct irritation may be produced by toxic substances, such as coffee, tobacco, hyperthyroidism; by exhaustion from overwork, etc.; by emotional excitement, anxiety, or apprehension; by too high or too low blood-pressure, as in arteriosclerosis or in anemia (Barker).

The second great division of cases of nervousness comprises those in whom there is a pathologically irritable or labile nervous system without signs of active irritation. In these cases also may the manifestations be psychic or physical.

Emotional States

Psychic manifestations of such an hyperirritable or labile nervous system are seen in individuals of an increased emotional irritability. These persons are subject to more or less violent "fits of

temper" upon slight provocation. The condition is met with in arteriosclerotics, in epileptics, in some paretics, and the feeble-minded. In addition to outbursts of temper, arteriosclerotics and epileptics show a rather uniform emotional irritability of less intensity, the so-called "crabbiness;" they become impatient and angry on being questioned or examined. In paretics and feeble-minded the general emotional tone may vary considerably and emotional irritability may be periodic or episodic. Less commonly, precocious dements show violent outbursts of temper, but without the real underlying emotion; or certain paranoids, notably the "paraphrenia systematica" group of Kraepelin, may display a violent temper when crossed or ridiculed with regard to their delusions.

Certain emotional states should here be mentioned, namely, anxiety, apprehension, excitability, outright fear and emotional instability. These states may occur in different forms of insanity, but they come to the clinician's notice mainly in hysteria and allied conditions. Occasionally, on thorough examination a "nervous" patient's symptoms sift down to some disturbance of the emotions; nothing else can be found.

The "Nervous Person"

There remain for our consideration those cases presenting physical manifestations of a labile nervous system. I wish to describe here a type of individual frequently met with in all walks of life, an individual who is convinced that he is nervous, but can point to no definite symptoms. There are, however, a group of physical signs, some or all of which may be found in the type under discussion.

Perhaps the most common of these signs is an exaggeration or liveliness of almost all the ordinary deep reflexes, especially the biceps, triceps, supinator and patellar. They are, however, of equal intensity on both sides. No clonus is present. The abdominal reflexes may be very active. The so-called Jacobsohn reflex can frequently be elicited. This consists of a flexion of the fingers, especially of the first two or three, when the dorsal aspect of the head of the radius is tapped with a percussion hammer. When highly exaggerated or when present on one side only, it is indicative of an upper neurone lesion; when of less intensity and symmetrical, it is present in other nervous conditions, especially in the nervous type here mentioned.

Next in importance is the condition of the hands. These are frequently cyanotic to a slight or moderate degree. At the same

time they may be cold and moist. One often notices, on shaking hands, that a person's hands are moist; on closer examination they may prove to be slightly cyanosed as well, especially if cold. With or without this state of cyanosis may be found a slight tremor of the fingers when extended and spread apart. It is very fine in character and best seen when transmitted to a sheet of paper laid over the hands. In certain cases the tremor is latent and detected only as Quinquaut's sign (see above). The cyanosis and moisture as seen in the hands may also occur in the feet, independent of the outside temperature.

The pulse of this "nervous individual" usually shows a slightly increased rate. Respiratory variations in the pulse-rate are fairly well marked. Vasomotor tone may show some instability; during examination the systolic blood-pressure may record at 160. When, however, the patient is placed on a couch and repeated trials made, say at two- or five-minute intervals, a systolic pressure of 110 may be recorded. The diastolic pressure remains fairly constant.

Another condition that is frequently seen in individuals of this description and in various mild cases of mental disease, is a more or less well marked acne. This is most commonly found on the face and back. In connection with this there is an increased oily secretion on the skin.

The pupils usually react promptly to light, but cases occur in which they are somewhat sluggish without being either irregular or unequal. Accommodation to distance is good.

This combination of signs, namely, (a) cyanosis, moisture, and fine tremor of hands, (b) lively reflexes, (c) variable pulse-rate and blood-pressure, (d) acne—any or all of which may occur in an individual without much else—are time and again seen in cases of mental disease. These include dementia precox, the depressed phase of manic-depressive insanity, certain paranoids and the psychoneuroses—neurasthenia, psychasthenia, and hysteria. Toxic and organic states, such as chronic alcoholism and general paresis, may produce the same picture. Are we justified in concluding that this "nervous individual" above described is the starting point of many a psychosis, neurosis and dementia; that this combination of signs is the early manifestation of what we hear spoken of as the "nervous diathesis"?

Summary

“Nervousness” is a very common complaint.

In the commonly accepted sense, “nervous” is taken to refer to a weak, excited, or excitable nervous system.

When carefully analyzed, cases of “nervousness” will be found to group themselves in some such manner as the following:

1. Those cases in which there are symptoms of an active irritation of the nervous system. Physical or motor manifestation of such irritation include the various tremors, choreas, athetoses, tics and the various convulsions. Psychic manifestations are restlessness, flight of ideas, and insomnia.

2. Those cases in which there are signs of a labile, hyper-irritable nervous system, not necessarily with active irritation. Psychic manifestations of such a condition are found mainly in the emotional realm and include emotional irritability, instability, etc. Physical signs often fall into a fairly definite group which is found in “nervous persons” who show not much of anything else. The chief of these signs are lively reflexes; cyanosis, tremor, etc., of the hands; blood-pressure and pulse variations; acne.

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RECENT PUBLICATIONS ADDED TO THE CLEVELAND MEDICAL LIBRARY

The following books, of interest to Members of the Medical Reserve Corps, have been placed on file at the Cleveland Medical Library:

Havard, Valery. Manual of Military Hygiene for the Military Services of the United States. 2nd edition, 1914.

Mason, Col. Charles Field. A Complete Handbook for the Sanitary Troops of the U. S. Army and Navy and National Guard and Naval Militia. 4th edition, 1917.

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A bibliography has been compiled of articles on medical subjects and problems related to the war, and appearing in the various medical journals since the beginning of the war. These comprise papers on surgery, medicine, hygiene, sanitation, hospitals, etc. This list is available for the use of any of the members of the Medical Reserve Corps, at the Cleveland Medical Library.

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EDITORIAL

HOSPITAL SOCIAL SERVICE

The importance of prophylaxis and prevention in medicine is being more and more appreciated. This includes not only keeping well those who are not sick, but also promoting and fostering a complete return to health, and guarding against relapse in those who

have recently gone through any sickness or operation. To keep a group of individuals in good health means both a very large economic saving to the community in dollars and cents and a very distinct contribution to the general contentment and happiness of these people; invaluable items and impossible of money evaluation. Wealth comes from weal, meaning well-being, and nothing contributes so generously to well-being as health.

Modern hospitals are now realizing the importance of this enlarged responsibility. No longer can the best interest of the individual be served by terminating the relationship between hospital and patient the moment the patient is discharged. Dr. Henry Dwight Chapin, in a recent article, says: "To attain its broadest usefulness the hospital must serve as a sort of social laboratory in which disease and distress should be traced to their ultimate sources." Though the follow-up system is, of course, more important in some branches of medicine than in others, this proportionate value is clear to any one. To discharge an open case of tuberculosis into a home where there are small children is little short of criminal. Only by constant supervision and instruction can such a patient know what a potential danger and constant menace he is. He must, therefore, be taught to conduct himself accordingly. In pediatrics a social service department is of incalculable importance. The homes must be scrutinized for cleanliness, sanitation, light and ventilation, and a pure milk and water supply must be assured. Without making every effort to guarantee protection against these every-day enemies of health, how can one expect the patient to battle against disease and death successfully? In obstetrics the duty is a three-fold one. The expectant mother should first receive antenatal instructions, and after confinement aid must be rendered to both mother and child. One might extend the argument to include all the various fields of medicine and surgery were additional argument necessary. The principle is sound and the trend of modern medicine is to assume these larger responsibilities. Many hospitals and institutions are now engaged in this pioneer work, the others must see the light and follow.

J. E. Mc.

ABSTRACTS

ABSTRACTS IN MEDICINE

The Salicylates.—Further Observations on Albuminuria and Renal Functional Changes Following the Administration of Full Therapeutic Doses of Salicylate. P. J. Hanzlik, R. W. Scott and T. W. Thoburn. *Arch. Int. Med.*, 1917: XIX: 1029.

The administration of salicylate in full therapeutic doses invariably causes the appearance of albumin, white blood corpuscles and granular casts or cast-like bodies in the urines of normal, rheumatic, non-rheumatic, febrile and afebrile persons.

The albuminuria is not of febrile origin, but due directly to the drug.

So far as renal functional efficiency is concerned, there is a diminution. This is indicated by; (1) lessened water excretion (taken in connection with 2 and 3); (2) diminished phenolsulfonephthalein excretion, and (3) accumulation of urea nitrogen of the blood.

The administration of bicarbonate together with salicylate has practically no demonstrable influence on the albuminuria and renal functional changes produced by the salicylates. R. W. S.

The Salicylates.—Renal, Functional and Morphologic Changes in Animals Following the Administration of Salicylate. P. J. Hanzlik and H. T. Karsner, *Arch. Int. Med.*, 1917: XIX: 1016.

The administration of salicylate in doses corresponding to full therapeutic doses for human beings per kilo of body weight, causes the appearance of albumin, leukocytes, casts or cast-like bodies and sometimes red blood corpuscles, in the urine of animals (cats, dogs and one rabbit).

A pre-existing albuminuria is aggravated by the administration of salicylate.

The albuminuria is of direct renal origin.

As far as the non-protein and urea nitrogen of the blood are concerned, there is a diminution in renal functional efficiency.

Morphologically a lesion of the kidney appears, varying in severity from simple cloudy swelling of the epithelium of the proximal convoluted tubules to extensive cloudy swelling of all the cortical parts of the tubules, associated with an acute intracapillary glomerulitis, the latter process being denominated as an acute tubular nephritis. R. W. S.

Two Cases of Probable Syphilis of the Intestines. D. A. Haller and I. C. Walker, *Am. J. M. Sc.*, 1917: CLIII: 824.

The authors report from the medical clinic of the Peter Bent Brigham Hospital two cases with presumably syphilitic lesions of the intestines. The first case had had attacks of diarrhoea for seven years. The symptoms were loss of weight, gripping pains in the abdomen, and loose, bright-yellow stools, which frequently contained blood. Proctoscopic examination showed hyperaemia of the mucous membrane of the rectum. The epithelial surface was granular looking and there was evidence of superficial desquamation. The surface was covered with bloody purulent mucus. The same condition was seen in the lower sigmoid.

Frequent examinations failed to show tubercle bacilli, parasites or parasitic ova in the stools. There was marked improvement after the use of neosalvarsan. A recurrence followed in about five months. This showed improvement after the administration of salvarsan. Haller and Walker considered that the case was one of syphilis of the intestine because of the history of infection, the general adenopathy, the persistently strongly positive

Wassermann reaction, the tendency to spontaneous healing, the local improvement and the gain in the patient's general condition following neosalvarsan, the more definite and lasting improvement with salvarsan, and the present excellent general condition of the patient.

The second case complained of stomach trouble. This was of two weeks duration. The symptoms noted were at first nausea and vomiting; later pain, coming twice in twenty-four hours, which was not relieved by food. Blood was vomited only once. Constipation was marked. The physical examination of the abdomen was negative except for slight tenderness or palpation in the epigastrium. The Wassermann reaction was strongly positive. The stomach contents on fasting showed 70 c.c. of greenish-yellow fluid with some well-digested food residue and much mucus, free HCL absent; total acid, 22; no sarcinae or Boas-Oppler bacilli. For two weeks, in spite of rest and a limited diet, no change was noted except that there was less epigastric pain and fewer attacks of vomiting. The treatment by diarsenol, intramuscular mercury, and potassium iodide was begun. Four days after the first dose of diarsenol all pain and vomiting ceased, and the stools gave a negative guaiac test. The patient began to gain in weight. Three months later he was entirely free from symptoms.

In this case, while it was impossible to localize the lesion, it was felt that it was not gastric, since blood was vomited only once, and since a test meal given after the stomach had been emptied failed to show a guaiac test, while the stools contained well-preserved red blood cells, pus cells, and mucus.

C. L. C.

Arteriosclerosis. Louis Favgeres Bishop, M. D., *Boston M. & S. J.*, 1917: CLXXVI: 721.

Bishop states that arteriosclerosis is primarily a disturbance of function, and the true pathology is a moving pathology. Those who die of arteriosclerosis die as an end result of the habitual change in the physiology of the body cells, because the process of nutrition of the individual cells has failed through lack of suitable food materials. In the treatment of arteriosclerosis, diet is of very great importance. Diet, the author asserts, must not be founded on the old principle of a low protein diet, but rather upon the principle of few proteins. This diet implies the absolute exclusion of those proteins which are believed to be harmful to the person concerned. Bishop is inclined to place more emphasis upon qualitative than upon quantitative considerations. He feels that individual idiosyncrasies to various proteins play an important part in the development of this disease, though he cites no experimental evidence to establish this point.

C. L. C.

The Association of Gastric Symptoms in Nephritis with Retention of Nitrogenous Waste Product in the Blood. Arthur F. Chace, M. D., *Am. J. M. Sc.*, 1917: CLIII: 801.

The writer directs attention to the fact that since the time of Richard Bright it has been recognized that renal disorders are accompanied by digestive disturbances. He has been particularly impressed with the number of cases of latent nephritis sent to the New York Post-Graduate Hospital with a diagnosis of gastric ulcer or toxic vomiting. The more common symptoms from which patients of this type complain are nausea, vomiting, loss of appetite, flatulency, abdominal distress, usually without definite relationship to meals, and headaches, frequently of the migrainous type. Owing to the depressed gastric secretion, the diagnosis of asthenic gastritis is usually made.

The author determined to compare the type and extent of the retention of waste products with any gastric symptoms which were noted, employing the newer methods for making these estimations.

Uric acid is normally the most difficult and creatinin the easiest to eliminate. The cases have been divided into groups, those showing high creatinins and those in which a high uric acid content was the prominent feature. The first group, comprising ten fatal cases, showed strikingly similar gastric symptoms, while it was apparent that the patients were all nephritics, the gravity of the situation was not appreciated until blood examination showed a marked retention of creatinin. In the second group were twelve cases showing gastric symptoms in which a high uric acid content was the special feature of the blood analysis. Tables and summaries of case histories are given. Chace's conclusions are:

Gastric symptoms are among the most common early symptoms of nephritis. In cases with obscure gastric disturbances the chemical examination of the blood has been found very valuable. Several cases are reported in which the estimation of the blood creatinin not only showed that the patients were suffering from severe nephritis, but gave a fatal prognosis. In some of the earlier cases the blood uric acid was of value as an early diagnostic sign.

C. L. C.

ABSTRACTS IN SURGERY

Acute Inflammation of the Neck of the Femur. James E. Moore, *Surg., Gynec. & Obst.*, 1917: XXIV: 725.

This disease involves the neck of the femur on the diaphysical side, just as it does in osteomyelitis in other locations. The cases clinically are of the acute overwhelming type, the sub-acute type, and the more common type of medium severity. The latter begins with pain in the hip joint, extending down the thigh, frequently accompanied by rigor, sweating, and rise in temperature to 104 degrees. Within forty-eight hours there is effusion into the hip-joint, the inguinal fold is partly obliterated, and a difference in the contour of the two sides is quite noticeable. The limb is flexed and abducted. There is marked polymorphonuclear leucocytosis. The X-ray at this time is negative.

After getting the confidence of the patient, the femur is grasped between the thumb and fingers and gentle pressure made up along the thigh. No acute pain will be felt. If one hand is now passed beneath the patient, the fingers over the joint posteriorly, and pressure is made by the other hand over the joint anteriorly, thus pinching the neck of the femur between the ends of the fingers of the two hands, the patient will immediately cry out.

The prognosis for life and limb is good if proper treatment is applied early, otherwise the danger to life and limb is very great. The treatment is prompt and efficient drainage, directly through the joint from in front, including an opening into the neck of the femur.

C. H. L.

The Successful Conservative Treatment of Early Gas Gangrene in Limbs by the Resection of Infected Muscles. Frankau, Drummond, and Neligan. *Brit. M. J.*, 1917: I: 729.

The authors quote Wallace to the effect that gas gangrene is rare without muscle injury; that it is chiefly a disease of muscles, and is rarely dangerous unless muscle is involved; that the lesion in the early stage is a longitudinal one, running up and down the wounded muscles, certain muscles escaping; that it is rare to find all the muscles of a segment of a limb involved, save in a distal segment to which the main blood supply has been cut off; and that there is little tendency for the infection to pass from one muscle to another.

In twenty-one months' experience in clearing stations no case was seen where gas gangrene commenced as a subcutaneous infection; injured muscle

was in all cases the initial focus. The appearance of crackling in the subcutaneous tissues is due to secondary extravasation of gas from the infected muscles below.

Resection of the infected muscles was practised. It should extend until muscle is reached which has normal color, good contractility and good blood supply as indicated by free bleeding from the cut surface. Amputation is indicated where the necessary resection would leave a useless limb. Fourteen cases are reported.

C. H. L.

The Bladder Changes Due to Lesions of the Central Nervous System.

J. Edward Burns, *Surg., Gynec. & Obst.*, 1917: XXIV: 659.

The chief changes consist in diminution in the tone of the bladder musculature, and of the internal vesical sphincter. As a result there is often a gradual accumulation of residual urine and in some instances a dilatation of the bladder. Incontinence occurs in a large majority of the cases. Where this exists there is a dilatation of the internal vesical sphincter and a funnel-shaped posterior urethra which is readily demonstrated cystoscopically and radiographically. The trabeculation of the bladder wall, although generally present, seems to be rather inconstant in its distribution.

The most effectual form of treatment consists in antisyphilitic medication combined with dilatations of the urethra. In five of twelve cases of incontinence there was entire relief, in six marked improvement, and in one no change. Of seven cases of difficult urination, five cleared up entirely. Of five cases of frequent urination, three were entirely relieved.

C. H. L.

Results of Surgical Treatment of Gastric Ulcer. Donald C. Balfour, *Surg., Gynec. & Obst.*, 1917: XXIV: 731.

Statistics are given of 677 gastric ulcers operatively demonstrated in the Mayo Clinic during the past ten years. For ulcer at the pylorus, posterior gastro-enterostomy is the operation of choice in the poor surgical risk, for although pylorectomy is followed by better results, the operative mortality is distinctively higher. For ulcers on the lesser curvature, cauterization and gastro-enterostomy is the operation of choice. Local excision alone of such ulcers is inadequate, 32 per cent of patients so operated on ultimately requiring a gastro-enterostomy. Segmental resection in large high ulcers and in hour-glass contraction is relatively safe and has been followed by good results. Ulcers on the posterior wall are associated with the highest operative risk.

C. H. L.

The Physiological Factors Concerned in Surgical Shock. Walter B. Cannon, *Boston M. & S. J.*, 1917: CLXXVI: 859.

A valuable summary of the various theories and factors involved is given. Cannon concludes that the evidence favors considering the altered sensitivity of the patient, his indifference to surroundings, his tonelessness, his hurried respiration, his rapid heart, as secondary to the low arterial pressure, for the same alterations are observed in severe hemorrhage. In shock, however, the blood is lost from the circulation by accumulating in the portal area, trapped, as it were, between the contracted splanchnic arterioles and the contracted portal venules in the liver. The central problem of shock, therefore, is to return the stagnant blood to the circulation. The methods thus far employed are not direct. It is suggested that the direct intra-abdominal application to the portal veins lying in the mesentery of some agent (perhaps pituitrin) capable of constricting the smooth muscle of the vessel would drive the blood out into the systemic circulation.

C. H. L.

ABSTRACTS IN PEDIATRICS AND CONTAGIOUS DISEASES.

A Case of Fulminating Diabetes in a Girl Fifteen Years Old. P. Gautier and Ch. Saloz, *Arch. de med. d. enf.*, 1917: XX:: 314-317.

This patient was a pupil in a dancing school. The onset of the diabetes was acute and manifested itself, as in the adult, by intense thirst and hunger. In spite of an enormous appetite, she became rapidly emaciated. Large quantities of urine were voided.

Six weeks later the patient was admitted to the hospital moribund, at this time urinalysis showed a trace of albumin sugar 5%, acetone and diacetic acid present, no biliary salts nor pigment, no urobilin, chlorides 1.5 grams per 1,000 c. c., urea 4.7 grams per 1,000 c. c., a few hyaline and granular casts. Blood examination was not remarkable except for a leucocytosis of 31,000. The spinal fluid contained 5% sugar. The Wassermann reaction of blood was positive.

On account of the impending coma intravenous injections of alkali were resorted to. (Sod. Bicarb. 15 grams, Sod. Chlor. 7.3 grams, water 1,000 c.c.) Of this solution 500 c.c. were injected on one occasion and 400 c.c. the following day. No improvement could be noticed. The patient died in coma two days after admission to the hospital and about ten weeks after the onset of the illness.

The necropsy revealed nothing which would account either for the disease or for its rapidly fatal termination. Gross and microscopical examination of the liver and pancreas were negative. J. E. Mc.

The Treatment and Management of Congenital Syphilis. George E. Smith, *Canad. M. Ass. J.*, 1917: VII: 27-30.

On account of the high mortality (50-80%) in congenital syphilis during the first six months of life it is very important that the diagnosis be established at the earliest possible moment. Every case with the least clinical suspicion should be subjected to a Wassermann test.

If the cases are cared for in an institution it is very important to guard the patient against exposure to other infectious diseases. This can be best accomplished by means of the cubicle system. The stay in the hospital should be as short as possible to avoid hospitalism.

The author recommends the routine use of intravenous arsenic therapy (Diarsenol). He begins with 0.1 gram. This is first repeated in ten days to two weeks and subsequently at like intervals until a negative Wassermann is obtained. For the injection a prominent vein is selected either the external jugular or the superior longitudinal sinus. No untoward results, directly attributable to this treatment, have occurred and some of the results have been very remarkable. Final results are promised later. J. E. Mc.

Infectious Diseases In Relation To Child Welfare. Claude B. Ker, *Edinb. M. J.*, 1917: n. s. XVIII: 389-395.

Ker discusses the influence of the infectious disease upon child welfare under two headings—First, the mortality for which they are responsible and secondly, the sequelae which follow in their train. He also mentions a third point: the time which these diseases may subtract from the educational period. He believes the latter is over-estimated and that the period of quarantine is not infrequently beneficial by supplying, good air, liberal and wholesome diet, and regular hours which internment in the average modern hospital entails.

The author, considers that the public attitude: to regard measles and whooping cough as trivial and diphtheria and scarlet fever as serious diseases, incorrect.

Scarlet fever according to Edinburgh statistics, where it is very prevalent, has only been responsible for 0.12 deaths per 1,000. The hospital death-rate seldom exceeds 3 per cent. and has been as low as 1.2 per cent. Diphtheria, which is greatly feared, was only responsible for a mortality of 0.29 per 1,000, and a case death-rate in hospitals 10 per cent. in 1914. In late years the author found case death-rates of 6 or 8 per cent. and in one year as low as 4 per cent.

In years when measles was prevalent mortality rates of 0.41, 0.40, and 0.37 per 1,000 and in years when the outbreaks were small, as high as 0.17 per 1,000 was the lowest rate in Edinburgh for ten years.

Whooping cough caused a rate of 0.57, 0.40, 0.51, 0.37, and 0.35 in epidemic years. The death-rate in hospitals where the cases were admitted on account of complications, case death-rates run from 11 per cent. to 18 per cent. The author in discussing the sequelae shows that diphtheria and scarlet fever have fewer and less serious sequelae than measles and whooping cough.

In regard to prophylaxis the author does not see what more can be done as regards scarlet fever and diphtheria.

Hospitalization of whooping cough and measles he believes has saved many lives. His opinion is that measles and whooping cough should be given preference over scarlet fever for admission to the hospital. He advises the reduction of the detention of scarlet fever cases to four weeks instead of six as a means to increase available space in the hospital for measles and whooping cough.

H. O. R.

Anthropometry and Feeble-Mindedness in Children. E. A. Doll, *The Child London*, 1917: VII: 395-398.

The author's research was undertaken with the aim of showing, first, that mental deficient are clearly sub-normal in the six major measurements employed by Smedley, namely: Standing height, sitting height, and weight, for distinction termed *physical* measurements, and strength of right grip, left grip, and vital (or lung) capacity, for distinction called *psycho-physical* measurements, and second, to determine with statistical accuracy the diagnostic value of the method.

The results for the physical measurements showed that the feeble-minded are subnormal in standing height, and still more so in sitting height. The idiots are most subnormal, the imbeciles somewhat less subnormal, and the morons are close to the normal average. The relation of the subnormality to exact mental age is expressed by Pearson coefficients of correlation (corrected for spurious influence of life-age) as follows: Weight .34, standing height .39, sitting height .47 (for girls).

The results for psycho-physical measurements showed that these are all farther below the normal average than the physical measurements, with vital capacity most subnormal, left grip next, and right grip next. Psycho-physical subnormality is very marked by grades of feeble-mindedness; with idiots the psycho-physical percentiles are very far below normal, with imbeciles far below, and with morons markedly below. The relation of psycho-physical ability to exact mental ages is expressed by the Pearson coefficients of correlation (corrected for spurious influence of life-age) as follows: Vital capacity .64; left grip .81; and right grip .62 (for boys).

The correlations between measurements were also computed, and proved highly valuable, but limitations of space prevent their discussion here.

For individual mental diagnosis the slope of the anthropometric curve proved most helpful. Since the feeble-minded are more subnormal in psycho-physical measurements than in physical, with both below the normal, the anthropometric curves for defectives slope downward. In conjunction with this downward slope, which was found in 93 per cent. of all the cases, there is 75 per cent. probability that a psycho-physical average between +10 and +50 indicates morosity, between +10 and -15 indicates imbecility,

and under —15 indicates idiocy. For normal subjects both physical and psycho-physical averages are above the median average, with the psycho-physical the farther above, so that normal anthropometric curves slope upward in 83 per cent. of seventy normal school students studied, and in 100 per cent. of nine exceptionally bright subjects. Therefore, in conjunction with other clinical tests the anthropometric curve has a very high degree of accuracy in the diagnosis of mental deficiency.

"We believe, therefore, that we have established a relatively simple auxiliary method for the examination of subnormals. This method is of great value not only to the psychological clinician, but also to the school physician, who, in addition to making physical examinations, is now expected to pick out the mental deficient in school. We have also demonstrated an anthropometric technique of known value and reliability to replace the vague evaluation of the results of physical tests now used in mental testing. Perhaps even more significant than this is the support which our research has given to the impression, now gaining headway, that mental deficient tend toward a condition of infantility, which is much more fundamental and general than is commonly supposed."

H. O. R.

Lead Poisoning in Children with Especial Reference to Lead as a Cause of Convulsions. Kenneth D. Blackfan, *Am. J. M. Sc.*, 1917: CLIII: 877.

The symptoms of lead poisoning vary according to the susceptibility of the child and to the duration of the infection. The injection of lead is the most common source of infection, although it may occur from the inhalation of dust containing lead. In early cases a change in disposition is often the first symptom which is noticed. The child becomes fretful, peevish, and often very restless at night. The appetite becomes poor, the breath foul, and frequent hemorrhages occur from the gums. The child may complain of pain in the epigastrium and legs. In the cases of longer duration the pains in the abdomen become continuous and more severe. Constipation is often present. The muscles may be so painful as not to permit the weight of the bed clothing. The patients walk with a waddling gait, on the outside of the feet; the toes are dragged, and with each step the legs are swung sideways before the feet are put to the ground. Very few cases show the wrist-drop so characteristic of the infection in adults. The paralysis generally first affects the legs in children. The temperature is usually normal but may be irregularly elevated. Very often the clinical symptoms are not sufficient to warrant a diagnosis of lead poisoning. In such cases other evidences of the condition are usually found. Among these are the blue line on the gums, the stippling of the red blood corpuscles, and the demonstration of the lead in the urine and feces. It is often present in the feces when it cannot be demonstrated in the urine. There is no way that the convulsive seizures in lead poisoning per se can be distinguished from those due to other causes. They may be general or local. The convulsions in lead poisoning do, however, have certain peculiarities in that they are very persistent, they show a great tendency to recur, and they are attended by a high mortality. Evidences of cerebral involvement other than convulsions are often present. One of Blackfan's cases showed rigidity of the neck and a positive Kernig sign. He also had a paralysis of the left external rectus muscle of the eye. Another patient had rigidity of the neck and a temporary paralysis of the facial nerve. There is very often evidence of involvement of the meninges, as shown by the increase of cellular elements in the cerebrospinal fluid. The author presents four cases with convulsions, three of which were fatal. One case entered the hospital with convulsions of unknown etiology. On his lips was found white lead paint and on investigating his crib it was found that the white paint on the railing had been entirely gnawed off. The author warns against the danger of infection from children eating painted articles, as white enameled cribs.

He says that in all patients with convulsions lead should be suspected as an etiological factor. The examination of the spinal fluid may prove to be an index as to the seriousness of the affection and of prognostic aid. In one patient changes were present in the fluid for many months and the patient finally succumbed. In the case which recovered the fluid could not be examined at the time of the convulsion, but four weeks later contained twelve cells and the globulin reaction was normal.

H. C. K.

The Operative Treatment of Hydrocephalus. William Sharpe, *Am. J. M. Sc.*, 1917: CLIII: 563.

The treatment of hydrocephalus has been most discouraging. This the author believes is due to a lack of appreciation of the fact that the condition is rarely limited to a dilatation of the ventricles alone—that is, the so-called hydrocephalus interna, which is the result of a blockage of the escape of cerebrospinal fluid from the ventricles into the subarachnoid spaces by an obstruction of the aqueduct of Sylvius or of the foramina of Majendie and Luschka, but is most frequently due to a lessened excretion of the cerebrospinal fluid through the subarachnoid cranial and spinal veins, the sinuses, possibly lymphatics, etc., so that the type of so-called hydrocephalus externa is developed. This condition of hydrocephalus externa is the most common and it is in this condition that treatment has been directed to drainage of the ventricles when they do not need drainage as the aqueduct of Sylvius and the foramina of Majendie and Luschka are not obstructed. The author cites the method of Dandy and Blackfan of the estimation of the excretion phenolsulphonephthalein first from the ventricles and then from the spinal subarachnoid spaces as a means of distinguishing between internal and external hydrocephalus. He then describes a much simpler method which can be applied at the time of operation. The object of the author's operation is to permanently drain the ventricles (in the internal type of hydrocephalus) and the subarachnoid and subdural spaces (in the external type) outward beyond the cerebrospinal canal, that is, beyond the dura into the subcutaneous tissues of the scalp, a most absorptive area being well supplied with lymphatics. As drainage tubes buried in the body tissues always become blocked with adhesions six linen strands are therefore inserted into the ventricles in the internal type and merely into the subarachnoid and subdural spaces in the external type and their ends brought out through the temporal muscle and temporal fascia beneath the scalp in a stellate manner. They cannot be absorbed in less than four or six months and it is hoped that in this time these artificial channels would be lined with endothelium or epithelium and thus their permanency and patency be assured. Sufficient time has not elapsed to judge the permanency of the operation, but the results cited are most encouraging.

H. C. K.

ABSTRACTS OF GYNECOLOGY AND OBSTETRICS.

Fetal Infection as a Cause of Still Birth, and Sundry Obstetric Theories. J. DeLee, *Bull. Lying-In Hosp.*, N. Y., 1917, 11.

DeLee expresses the belief that intrauterine fetal infection is not an uncommon cause of still-birth. He gives case histories and autopsy findings of 5 cases which led him to express this opinion. In the various fetal organs, including the blood vessels, there was found in one place or another a sufficient number of pathogenic organisms to, in DeLee's opinion, account for the death of the fetus.

Intrauterine scarlet fever, typhoid fever, and smallpox have been known for years, therefore, reasoning by analogy, DeLee believes that disease caused by bacteria may be contracted by the fetus in utero. The mother may have no sign or symptom of infection and yet the fetus come into the world with evidence of infection.

The author expresses the belief that post-partum fever and the so-called "physiological chill" after delivery may be accounted for by bacterial infection, and the result either of toxins thrown off by the fetus or of the poisons liberated by bacteria in the fetus or uterine wall.

The sources of intrauterine infection are:—

1. By the blood stream.
2. By contiguity from a neighboring focus, such as pus tube, appendix, infected fibroid, etc.
3. By wandering up through the cervix from the vagina, being pushed up through the cervix at coitus or instrumentation.

A possibility is expressed that eclampsia, impetigo herpetiformis, premature separation of the placenta, acute hemophilia, habitual abortion, nephritis, diabetes and perhaps other pathological states during pregnancy may be due to infectious organisms or their products. It is recommended that every still-born fetus be carefully autopsied and emphasized that no examination is complete without careful bacteriological examination.

W. D. F.

Conservative Treatment of Eclampsia. R. McPherson, *Bull. Lying-In Hosp., N. Y.* 1917: II: 48.

In a paper published by McPherson in 1909, he stated he was not in favor of the conservative treatment of eclampsia. At that time with radical treatment his figures showed a maternal mortality of 30.8 to 33 per cent. and fetal mortality of 44 per cent.

In 1915, the author began the so-called "rotunda" treatment in his clinic, statistics for which published in the above article show a maternal mortality of 8.6 and a fetal mortality of 40 per cent.

The essentials of the "rotunda treatment" are as follows: The patient on admission is catheterized, blood pressure taken, and put to bed in a dark room, $\frac{1}{2}$ gr. morphine sulphate is given hypodermically, the stomach is washed out thoroughly and 2 ounces of castor oil left in the stomach. If the systolic blood pressure is greater than 175 mm. of mercury, phlebotomy is done and sufficient blood withdrawn to bring the pressure down to 150 systolic. The patient is kept quiet and given $\frac{1}{4}$ gr. morphine every hour until the respirations drop to 8 or 10 to the minute. By this time the respirations have dropped to this rate the convulsions have usually ceased and labor will have started. The majority of the cases delivered themselves spontaneously after short labors.

W. D. F.

The Clinical Course of Cancer in the Light of Cancer Research. Harvey R Gaylord, *Surg., Gynec. and Obst.*, 1917: XXIV: 94.

The author admits that but little has been produced of practical value by cancer research, although a great many facts have been accumulated which will be invaluable in the further study of this problem.

For example, take immunity to cancer. Intensive study of types of cancer in the lower animals has shown conclusively that cancer is not one disease, but a great group of diseases. The cause of chicken sarcoma has been revealed, and in other groups, like the round cell sarcoma of dogs, the spindle cell sarcoma of rabbits, the endemic sarcocarcinoma of the nasal passages of horses and cows, carcinoma of the esophagus and stomach of rats, etc., our knowledge of the probable etiology is well advanced. We know with certainty that different types of cancer viewed in the past collectively, must now be studied separately.

Considering immunity which phenomenon is common to all types, we know that when the disease is transplanted, the host develops a resistance which is greatest in the early stages of the disease.

Mice inoculated with mouse cancer, after developing tumors of considerable size, recover spontaneously after retrogression and disappearance of the growths.

The chance of spontaneous recovery in inoculated animals is inversely proportional to the duration of the disease and size of the growth. This explains why early surgical interference gives such vastly superior results.

The blood of mice which have recovered spontaneously has an inhibiting effect upon the growth of similar tumors if the animals are treated while the inoculated growths are yet small. The immunity aroused by the primary inoculation is sufficient for a time to prevent successful secondary inoculation.

The loss of blood, either substantial hemorrhage or slight repeated bleedings, results in more rapid growth of the inoculated tumor than in controls. Crile and Beebe have demonstrated immune bodies in the blood stream by transfusing dogs inoculated with sarcoma, from animals with well developed tumors, and either effected a cure or produced a very pronounced decrease in rate of growth of the recently inoculated tumors.

Ether, or especially chloroform anaesthesia, decreases immunity and is followed by accelerated growth. On the human subject, how frequently, a clinically favorable operative case after operation rapidly develops recurrences which are accelerated in growth and lead to early death.

In many cases of primary tumor the immunity is sufficient to prevent metastasis at least for a prolonged period. The difference in the natural immunity of the individuals explains the slow growth and absence of metastasis in one case, where progress is very rapid in another individual with a similar tumor in the same location.

By massage, an unusual number of tumor cells are thrown into the circulation, and unless the resistance is very high, lead to the rapid development of metastasis.

Immunity is probably specific for each type of cancer. Immune bodies are in the circulating blood and are derived from the splenolymphatic system where all the known types of immunity originate. Evidence is offered that the X-ray and radium owe their curative effect to their influence on the splenolymphatic system, increasing through it, the immunity of the individual.

W. D. F.

ABSTRACTS OF DERMATOLOGY

Syphilitic Arthritis. A Question of Diagnosis. Archer O'Reilly, *Interstate M. J.*, 1917: VI: 585.

The author finds that 10 per cent of all orthopedic cases seen at the Washington University Hospital are luetic in origin. Joint syphilis is of three principal types:

1. Early secondary, consisting mainly in multiple joint pains and apparently toxic in origin.

2. Secondary, where one finds a single synovitis.

3. Tertiary, where there is a simple synovitis, primary or secondary to an adjacent gumma. We also meet with bone changes, which are very similar to those of osteoarthritis.

The diagnosis is to be made from the history, physical findings, Wassermann test, and therapeutic test.

The importance of a correct diagnosis is obvious, as it is often a question of tuberculosis if not luetic in origin.

H. N. C.

A Case of Nodose Bromide Eruption in Breast-Fed Infants. E. H. Molesworth, *Brit. J. Dermat. Syph.*, 1917: XXIX: 30.

The author reports a ten months breast-fed babe which had taken no drugs. When seen it had multiple nodes, crusted and granulomatous in ap-

pearance, on the face and buttocks. The mother for three or four months had been taking, nearly every night, a sleeping draught consisting of 30 grams of potassium bromide. The lesions gradually died away in six weeks after the drug was stopped in the mother. These cases are very rare and the writer was acquainted with only two similar cases—one reported by Colcott Fox and one by Jonathan Hutchinson. H. N. C.

The Properties of Tetryl (as Affecting the Human System). Lucy Cupps, *Brit. J. Dermat. Syph.*, 1917: XXIX: 3.

Industrial Diseases Due to Tetryl. Wm. L. Ruxton, *Brit. J. Dermat. Syph.*, 1917: XXIX: 18.

The writers call the attention of the profession to a series of symptoms due to working with tetryl—trinitro-phenyl-methyl-nitramine, an explosive. It is met with in four forms; ground powder, very fine crystals, larger crystals, and granular masses. Apparently persons with moist skins are most affected and the skin lesions are probably traumatic in character. The dermatitis setup is of two types: a diffuse rose-red inflammation and a papulo—pustular eruption. Both types are preceded by intolerable itching. Very marked loss of hair may also occur. The drug also produces abdominal symptoms, asthmatic or asphyxial respiratory symptoms, hemorrhages from the mucous membranes, headaches and giddiness. They also report a prolonging of the menstrual period. Lengthy directions are described by the authors in prophylaxis. H. N. C.

ABSTRACTS OF OPHTHALMOLOGY

Ophthalmological Experiences in the Field. K. Wesseley, *Wuerzburger Abhandl. a. d. Gesamtgebiet d. prakt. Med.*, XV, part ix, and *Centralbl. f. prak. Augenheilkunde*, 1915: 211. Abst. the *Ophthalmoscope*, 1916: XIV: 330.

Since the commencement of the war on the west front there have been established central stations for soldiers wounded in the eye, this organization affording the best care of the wounded and diseased, owing to the provision of special appliances and the presence of ophthalmic experts. The author emphasizes the importance of being able to replace spectacles, and every large Sanitaets-Formation is provided with boxes of lenses from which simple corrections can be immediately supplied, while the more complicated lenses can be obtained from Berlin without undue delay. Artificial eyes made of lead glass have proved themselves of service in the field. For the extraction of magnetizable intraocular foreign bodies, a large hand-magnet, which can be connected with the dynamo of the field Roentgen apparatus, has been employed. As regards disease, the author mentions metastatic conjunctivitis associated with acute articular rheumatism, and the appearance of herpes febrilis following typhoid inoculation. As to operations, he emphasizes the importance of the excision of the sclera following destruction of the eye, and of early suturing of lacerations of the eyelids. Choked disc was observed to disappear promptly after a decompression operation. As a rare case is mentioned that occurring in an officer, who suffered from a shot wound over the middle of the left clavicle. The projectile was lodged near the spinal column. Although the patient was otherwise well, a partial ptosis of the left upper eyelid and contraction of the left pupil showed that the sympathetic of the neck had been involved in the injury. R. B. M.

Eye Injuries in the German Army. W. Uhthoff, *Berliner klinischer Wochenschrift*, 1916: LIII: 78. Abst. the *Ophthalmoscope*, 1916: XIV: 335.

The author is consulting ophthalmologist to the Sixth German Army Corps and has analyzed the statistics of about 600 eye cases in a reserve hos-

pital to which he was attached. The proportion of non-traumatic to traumatic cases was as 1 to 1.7. Keratitis dendritica, a herpetic affection of the cornea, constituted 25 per cent of all the inflammatory diseases of the cornea, and was attributed to the strain and exhaustion of war. In but a few cases was the disease apparently due to traumatism. Serpentine ulcer was observed in about 1 per cent, the comparative rarity of this disease being no doubt due to the soldiers being in the prime of life. Another disease found to be unexpectedly rare was gonorrhoeal conjunctivitis, but one case being encountered. Yet, of other gonorrhoeal complications, there was an abundance in the neighborhood. Trachoma accounted for only 5 per cent of the 600 cases, and most of them were of long standing. Iritis, which formed about 8 per cent of all the non-traumatic diseases, was due to syphilis in every third case, to rheumatism in every third case, and to unknown factors in the remaining third. There were 252 cases of direct injury to the eye, and the sight of one eye was totally lost in 46 per cent. The proportion of total blindness to blindness on one side only was as 1 to 10. R. B. M.

The Ophthalmological Aspects of the European War as Seen in the American Ambulance of Paris. Hunter W. Scarlett, M. D. Proceedings of the Section on Ophthalmology of the College of Physicians of Philadelphia, *Annals of Ophthalmology*, 1917: XXVI: 381.

Trench fighting produces so many head and face wounds that the number of eye injuries is necessarily large. During the first two years of the war the Eye Service of the American Ambulance treated about five hundred cases. These were of all degrees of severity, and consisted of traumatic conjunctivitis, extra- and intraocular foreign bodies, traumatic cataracts, tears of the choroid and retina, detached retina, injuries to optic and oculomotor nerves, wounds of the orbit causing loss of lids and conjunctival sacs and in some cases of bony parts of the orbit, cerebral injuries producing lesions of the optic centers and pathways.

Most enucleations were done under local injections of novocain and adrenalin. This was done mainly because the administration of ether would have exposed the patients to pneumonia, because of the associated face injuries which were usually present. The percentage of blindness occurring in the American Ambulance was three per cent.

The projectiles causing the ocular wounds were as follows in their order of frequency: (1) Exploding shells, (2) rifle and machine-gun balls, (3) grenades, (4) bombs, (5) shrapnel. The mode of action was: (1) Contusion of the globe by either direct or indirect action, (2) rupture of the membranes with or without penetration, (3) infection of the globe after injury, (4) section or injury of the optic or oculomotor nerves, (5) intracranial lesions. R. B. M.

ABSTRACTS IN LARYNGOLOGY, RHINOLOGY AND OTOTOLOGY

Epidemic Ulceromembranous Stomatitis (Vincent's Angina) Affecting Troops. A. R. Campbell, M. D., and A. D. Dyas, M. D., *Journal A. M. A.*, 1917: LXVIII: 1596-1598.

Vincent's angina has become quite common since the beginning of the war. At the Canadian Military Hospital in England, 129 cases were seen during a four months period. Swabs taken from the throats of the troops showed a few Vincent's angina organisms in about fifty per cent.

Four types of disease are observed:

1. The tonsillar type is the most frequent. It resembles diphtheria closely, in severe cases, although the constitutional disturbance is not so marked as in that disease or in acute tonsillitis. A bacteriological examination is necessary for differential diagnosis.

2. Deep ulceration behind the last lower molar tooth is the type next in frequency.

3. Pyorrhea caused by Vincent's organisms occur frequently. Patients receiving mercury are predisposed to the infection.

4. The severest type is a general infection of the mouth. The membrane extends over the cheeks, tongue, pharynx and palate. Ulcerations occur on the cheeks where they are in contact with the teeth, and the tongue is greatly swollen.

Seven cases of tracheo-bronchial infection were seen. There was no visible lesion in the mouth or throat. The clinical picture was that of a moderately severe bronchitis. The sputum was abundant and contained Vincent's organisms in large numbers. These patients all recovered without specific treatment in about three weeks.

Four cases of balanitis were observed.

For treatment arsenic in the form of liquor potassii arsenitis, swabbed on the lesions three times a day, is the most effective agent. In pyorrhea this is combined with ipecac and glycerin and used with a tooth brush. In severe cases arsenic is administered internally.

C. E. P.

Cancer of the Larynx. George W. Crile, M. D., *Ohio State M. J.*, 1917: XIII: 402-403.

Operation for cure of intrinsic cancer of the larynx gives a favorable prognosis. While operation for extrinsic cancer does not offer so favorable a prognosis, it should be undertaken in selected cases.

The chief dangers of laryngectomy are mediastinal infection and vagitis. The first danger is obviated by doing the operation in two stages. The first stage consists of an exposure of the trachea and packing with iodoform gauze along its sides. The reaction fixes the trachea and protects the mediastinum. The danger of vagitis is minimized by carrying the dissection high up on one side in order to give the vagus the maximum exposure and irritation it is to receive and allow it to readjust itself before the other vagus is exposed on the completion of the operation in the second stage.

The author's conclusions are as follows:

"1. Intrinsic cancer of the larynx is perhaps more curable than cancer in any other part of the body.

"2. Operation should be early.

"3. Laryngectomy is most safely performed in two stages.

"4. Even if an extrinsic cancer of the larynx seems hopelessly extensive, the patient should be given a fighting chance by as far-reaching a dissection as is possible."

C. E. P.

Lumbar Puncture in Mastoid Disease. Archer Ryland, Capt. R. A. M. C., *Jour. Laryn., Rhin. & Oto.* (London), 1917: XXXII: 4: 32.

The author believes that lumbar puncture should be done on all cases of mastoid disease where operation is performed, as soon as the anesthesia is complete and before the operation is begun.

(1) "Because it is desirable to know whether or not the spinal fluid is turbid."

(2) "Because, in certain instances, the tissue reactions fail, and the middle-ear infection proceeds with great rapidity to an intracranial and meningeal infection."

The procedure itself is void of danger. Information gained during the operation often gives no clue as to the severity of the infection or the failure of nature to throw out barriers. With a preliminary lumbar puncture we are apprised of this danger at once and before it is too late. If taken thus early trans-labyrinthine drainage may prove of value. The aural surgeon, unlike the abdominal surgeon, has no other means of knowing whether the infection with which he has to deal is localized or general.

(3) "Because it is probable that a certain proportion of these cases which begin to manifest signs of meningitis after an aural operation have been in reality cases of meningeal infection for hours, even days, before an operation was performed."

(4) "Because lumbar puncture as a routine procedure would do much to establish the frequency of occurrence, and to inform us as to the type of case in which we are to expect occurrence of the condition known as meningitis serosa. Also it might result in a more clear and complete elucidation of the condition itself."

(5) "Because the procedure would afford a safeguard of some value to the reputation of the operator."

W. B. C.

ABSTRACTS IN PATHOLOGY

Simple Method for Staining Capsules of Bacteria. F. M. Huntoon, *J. Bact.*, 1917: II: 241.

The following simple method is recommended as a quick and reliable method for what has always been a somewhat uncertain and tedious procedure.

Have two solutions ready:

Solution 1:—

3 grams. of Nutrose are sifted into 100 c.c. of distilled water and heated to 100° in the Arnold sterilizer for one hour. Add 5 c.c. of 2% aqueous solution of phenol, decant into test tubes and allow to settle. Use the supernatant fluid only.

Solution 2:—

2% aqueous solution of carbolic acid, 100 c.c. Concentrated lactic acid, 0.25-0.5 c.c., 1% acetic acid, 1 c.c. Saturated alcoholic solution of boric fuchsin Carbol fuchsin (old), 1 c.c.

Technique:—

Use solution one as a diluent, making a thin smear of bacteria with a loop. 2. Dry in air. 3. Cover the slide with solution 2 for 30-45 seconds. 4. Wash quickly in water, dry and examine.

A. A. E.

Studies on Bacillus Welchii With Special Reference to Gas Gangrene.

J. P. Simonds, *J. Exper. M.*, 1917: XXV: 819.

To the average reader Dr. Simond's summary is most interesting:

(1) Spores of the Bacillus Welchii group of bacteria were found on 100 per cent. of the soldiers who had come directly from the trenches. and in the meshes of all the samples examined of the new cloth from which the uniforms were made.

(2) In fifteen out of twenty fresh war wounds members of this group of bacteria were found. The deep-lying lacerated muscle tissue appears to be the most important factor in the onset of gangrene.

(3) Bacillus Welchii is able to grow and produce gas in broth containing up to 40% saccharose, some strains may be able to do so in 50%, but none can in 60% saccharose broth.

As to practical possibilities the author suggests:

1—Injections of oxygen gas will be much more effective if made early, and

2—The good effect of these injections may be not wholly due to its bactericidal effects but partly to its power to depress the vital activity of Bacillus Welchii whereby less gas is produced.

A. A. E.

Observations On the Giant Cells in Tuberculosis. James H. Warren, *J. Med Research*, 1917: XXXVI: 225,

By means of the Bielschowsky silver impregnation stain, Warren has brought further evidence that the endotheloid cells found in tubercles are of reticular tissue origin and the stain shows reticular fibrils within their cytoplasm. The smaller giant cells also show reticular fibrils in their cytoplasm and this together with their nuclear characteristics leads him to the conclusion that they are formed by fusion of cells of reticular tissue origin. Warren considers it entirely possible that the cellular reaction in tuberculosis is local and due to stimulation of reticular tissue cells.

M. L. R.

DEPARTMENT OF THERAPEUTICS

Conducted by J. B. McGEE, M. D., Cleveland

Tetanus: F. Golla, in the *Lancet* for May 5, states that the War Office Committee for the Study of Tetanus has emphasized the advantages of serum treatment in tetanus by the intrathecal method. In a series of experiments made on cats and on rabbits injected with equivalent doses of tetanus toxin, the results obtained show the indubitable superiority of the intravenous and intrathecal routes over the subcutaneous. Such superiority may be attributed to the slow absorption of tetanus antitoxin injected subcutaneously. It is shown that even when injected 24 hours later, antitoxin by the intrathecal route is more efficient than the subcutaneous injection. None of the results gave any encouragement to the view that toxin may be neutralized once it has entered the nervous system. The whole problem of the serum therapy of tetanus appears to be that of cutting off fresh supply of toxin by bringing antitoxin into relation with the focus of infection as rapidly as possible. In animals with a high resistance to tetanus, such as cats and rabbits, the symptoms develop comparatively slowly; in the susceptible guinea pig, development is much more rapid, even if we make allowance for the shorter nerve-path traversed by the toxin to reach the central nervous system. Man is much more akin in susceptibility to the guinea pig, and in the unprotected subject, symptoms may develop from a local spasm to generalized tetanus with startling rapidity. The greater swiftness with which antitoxin can be brought into action by intrathecal and by intravenous administration, rather than by subcutaneous, should, therefore, be of paramount importance in treatment. This fact has been to some extent obscured during the present war owing to prophylactic use of serum having converted man from a susceptible to a resistant organism, and this is evinced in the majority of cases of a clinical picture of tetanus, which had previously been very rare in the human subject; though it is the rule in highly resistant animals, as the cat and the rabbit. The disease first manifests itself in local spasms of the muscles supplied by the spinal segments directly in nervous continuity with the wound. It may either remain localized or more or less slowly invade the whole nervous system. In such cases the better results obtained by intrathecal administration are not always so apparent, but since it is impossible to say whether or not a sudden rapid invasion of the whole central nervous system may develop, it would appear to be courting needless risks to delay bringing into action of antitoxin by adopting the subcutaneous method.

Substitutes for Salvarsan: The *Therapeutic Gazette*, in its May number, comments editorially on substitutes for salvarsan and neosalvarsan in the treatment of syphilis. The difficulties which have existed during the last few months in obtaining salvarsan and neosalvarsan have naturally turned the minds of the profession to the question

as to whether satisfactory substitutes could be utilized. In Canada a preparation virtually identical with salvarsan is now manufactured and widely sold, and during the time that salvarsan and its ally were practically unobtainable in this country. Schamberg, of Philadelphia, placed upon the market a substitute or identical preparation, which since the introduction of a new supply of salvarsan has had to be withdrawn under the patent law. Both of these preparations have given fully as good results as those made in Germany, but at present cannot be obtained in the United States. Notwithstanding the high hopes which we had when salvarsan was introduced, to the effect that this new compound would destroy every spirochete in the body, hopes which were speedily dashed to the ground by experience, it would nevertheless appear that salvarsan or neosalvarsan is the most efficient destroyer of the spirochete that we have, unless possibly sodium salvarsan, a still newer compound, proves ultimately equally efficacious. So far as the cacodylate of sodium is concerned, the point is not as to whether the patient improves under its use, but whether the spirochetæ in his body are promptly destroyed, so that he ceases to be a disseminator of the disease and ceases to be a hotbed for the multiplication of the spirochetæ, which will attack his own tissues. Recent investigations seem to indicate that as a destroyer of spirochetæ, cacodylate of sodium is useless. Nichols, Cole and others have proved that its spirocheticidal property is almost, if not quite, *nil*, that it does not change a positive Wassermann into a negative test, nor heal the mucous patches which so frequently disseminate the disease. As to salvarsan and neosalvarsan, Trimble and Rothwell believe they have proved that there is no great difference in the value of the two preparations, and because of the ease with which neosalvarsan is administered and the small quantity of liquid which must be injected when it is employed, they believe it is the superior compound. The general opinion is, however, that to produce the results induced by salvarsan a larger dose is required. It is well to note that Trimble and Rothwell believe that four injections of salvarsan or neosalvarsan in treating syphilis are quite inadequate, and the use of these drugs, unless followed by mercury, is also inadequate. These facts cannot be too widely disseminated.

Pneumonia: In the *New York Medical Journal* for April 21st, Samuel

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Bronchial Asthma: In the June number of the *American Journal of Medical Sciences*, Montgomery H. Sicard considers the treatment of bronchial asthma by vaccination, with report of cases. Measures for cure of asthma have generally proved useless; to help the individual attacks, adrenalin, morphin, strychnin, atropin, lobelia, potassium iodide, stramonium and asthma powders have all been extensively used, but no means of preventing future attacks has been found. Asthma is undoubtedly in some cases an expression of anaphylaxis; clinically it resembles the hypersusceptibility produced in animals by the injection of a foreign proteid. Another source of attack (with which he has been working) is due to the presence of bacteria, primarily streptococcus viridans, or streptococcus hemolyticus, secondarily micrococcus catarrhalis. Whatever the variety of germ, an autogenous vaccine will cure the attacks. It is best given twice a week, in constantly increasing strength, for twelve to twenty injections. It is much better to give such dosage that local reaction occurs, although he has had cases which showed no local reaction. On the other hand, he has had cases which showed no improvement until doses were given in sufficient quantity to cause local reaction. He has adopted the practice of beginning with 100,000,000 in adults, and feeling his way cautiously until finding the dose that caused local reaction and then provoking a local reaction on every injection. If at any time the local reaction be too severe, or if general symptoms occur in the form of fever, chilliness or general malaise, or aches, or increase in the asthma, he allows a rest for a period before beginning again, using his judgment as to continuing the same dosage or dropping back to a smaller one. It is better to avoid going back to a smaller one; 1,000 million is often far enough to carry them, although more obstinate cases may require 2,000 million, and he has carried them to 3,000 million and higher. It is very striking to see the asthma clear up after the first injection, as has happened in a number of his cases. The longest period of cure he has to report is two years. He has been struck with the fact that streptococcus seems to be the chief offender. He has had no pneumococcus cases. Micrococcus catarrhalis, he is convinced, is usually a mouth infection in asthma, and vaccination by it has little action on the attacks in a mixed infection. Babcock reports excellent results in a case of mixed infection, in which he used a mixed vaccine of pneumococcus, streptococcus and an anerobic bacillus. After using for a time, semi-weekly, it is well to make the intervals weekly.

The Menopause: In the June number of the *American Journal of Clinical Medicine*, William Rittenhouse writes that the whole subject of the menopause, as well as of disturbances of health so often following its inception, is an important one. The majority of women suffer at this time more or less disturbance of health. With some it is merely a discomfort, but it may vary from this degree to serious and even fatal disease.

Disordered function of the nervous system commonly is present. These nervous disturbances, while not as a rule serious, nevertheless are capable of causing a great deal of suffering and of changing a sane and normal woman into an irritable, fretful and complaining invalid, overwhelmed with melancholy, a burden to herself and a trial to her friends. One of the commonest symptoms is that disturbance of the vasomotor nerves which these patients call "hot flashes." Many times a day a wave of heat seems to pass over the whole body; the skin becomes deeply flushed, and the patient feels as if she must have fresh air or else suffocate. A great variety of nervous symptoms are possible at this time, as the entire nervous system or any part of it may be affected through the sympathetic system by the changes taking place in the reproductive organs. No matter how large a doctor's experience may have been, he is always liable to meet something new in this line. He details a case that simulated exophthalmic goitre so closely as to deceive several good diagnosticians. He suspected that the climacteric was the probable cause and treatment with this end in view was so satisfactory that in three months she was, to all intents and purposes, well. His sheet-anchor in the various disturbances of the menopause is the formula known as Baer's sedative—valerian, sumbul and asafetida, one grain of each. He has experimented with each drug separately, but did not get the same good results as from the combination. Every form of nervous disorder brought on by the change of life is benefited by this line of treatment. Of course, if there is indication for special treatment, he employs it. He uses it in the form of tablets, sugar-coated and containing one grain each of the extract valerian, extract sumbul and asafetida. While he uses it chiefly in the neuroses of the menopause, he finds it also of value and preferable to the bromides, in nervous and hysterical conditions, at any time, in both sexes.

Heroin: The *Medical Council* for February calls attention to the fact that the United States Public Health Service has directed its medical officers to cease using heroin and to turn in any supplies on hand, and it is said the army and navy medical services are contemplating similar action. A committee of the Prison Reform Association proposes introducing into Congress a bill absolutely prohibiting the manufacture and sale of heroin in the country. To be effective, such a bill would, after enactment into law, require State legislation along the same line. The writer of the article states that when heroin was introduced he used it and was within a short time seriously alarmed over its action in two cases in the dose of 1/6 grain then recommended. Later a case nearly resulted fatally from 1/32 grain doses. She was taking one of the proprietary heroin-bearing cough remedies, and not exceeding the dosage recommended. One of his friends died from but two doses of 1/16 grain heroin in combination with acetanilid, the combination being a proprietary tablet. He has also seen the deplorable effects of heroin when taken by addicts. Heroin possesses all the disadvantages of morphin, being as effective in restraining cough, but not more so, but very dangerous as a habit-inducing agent. Bastedo asserts that codein is much superior to heroin in relieving cough, and his clinical observations abundantly support his contention.

NEW AND NONOFFICIAL REMEDIES

Kephalin—Armour.—The hemostatic phosphatid obtained from spinal cord and brain tissue of mammals. It is essentially the same as Brain Lipoid, N. N. R. For a discussion of the actions and uses see *New and Nonofficial Remedies*, 1917, p. 124, under "Fibrin Ferments and Thromboplastic Substances (Kephalin)." Kephalin-Armour is applied freely to bleeding or oozing surfaces in 1 to 2 per cent suspensions in physiological sodium chlorid solution. Armour & Co., Chicago (*Jour. A. M. A.*, June 2, 1917, p. 1625).

Thorium Nitrate.—A white substance, very soluble in water and alcohol. Soluble thorium salts resemble alum in their local astringent and irritant

properties. They are not absorbed from the alimentary canal. The non-precipitant double salts of thorium are practically non-toxic, even intravenously. Thorium salts are fairly radioactive.

Thorium Sodium Citrate Solution.—Prepared by dissolving thorium nitrate 10 Gm., and sodium citrate, 15 Gm., in water, neutralizing with sodium hydroxide and diluting to 100 Cc. Being impervious to Roentgen rays, the solution is used to obtain cystograms of the renal pelvis and urinary bladder.

Thorium Solution for Pyelography.—H. W. and D., 10 per cent.—It is the same as thorium citrate solution. Prepared by Hynson, Westcott & Dunning, Baltimore, Md.

Stronger Thorium Sodium Citrate Solution.—Prepared by dissolving thorium nitrate, 15 Gm., sodium citrate, 22.5 Gm., in water neutralizing with sodium hydroxide, and diluting to 100 Cc. It is used for obtaining urethral pyelograms.

Thorium Solution for Pyelography.—H. W. and D., 18 per cent.—It is the same as thorium citrate solution. Westcott & Dunning, Baltimore Md. (*Jour. A. M. A.*, June 16, 1917, p. 1817).

Betanaphthol Benzoate.—Anthony Hammond Chemical Works, Inc.—A brand of betanaphthol benzoate which complies with the N. N. R. standard for this drug. Anthony-Hammond Chemical Works, Inc., New York City.

Calcium Cacodylate.—The calcium salt of cacodylic acid containing from 43.5 to 48 per cent of arsenic in the form of cacodylic acid and free from arsenite, arsenate and monomethylarsanate. It has the mild arsenic action of cacodylates. Calcium cacodylate is white, almost odorless, and very soluble in water.

Ampuls Calcium Cacodylate Solution.—Mulford.—Each ampule contains calcium cacodylate 0.045 Gm. in 1 Cc. The H. K. Mulford Co., Philadelphia, Pa.

Chlorazene Surgical Cream.—It contains chlorazene, 1 Gm., in 100 Gm. of a base composed of sodium stearate, 15 per cent, and water, 85 per cent. The Abbott Laboratories, Chicago.

Borcherdt's Malt Extract with Cod Liver Oil.—A liquid composed of cod liver oil, 20 per cent, and Borcherdt's Malt Extract Plain, 80 per cent. The Borcherdt Malt Extract Co., Chicago.

Borcherdt's Malt Extract with Creosote.—100 Cc. contain beechwood creosote, 4 minims per fluidounce, in Borcherdt's Malt Extract Plain. The Borcherdt Malt Extract Co., Chicago.

Borcherdt's Malt Extract with Cascara Segrada.—100 Cc. contain cascara segrada, 60 grains per fluidounce, in Borcherdt's Malt Extract Plain. The Borcherdt Malt Extract Co., Chicago (*Jour. A. M. A.*, June 23, 1917, p. 1911).

Lipiodine—Ciba.—The ethyl ester of iodobrassicidic acid containing 41 per cent of iodine. Lipiodine—Ciba is odorless, tasteless, insoluble in water but very soluble in fatty oils. When administered, it is absorbed almost completely and excreted more slowly than inorganic iodids but more rapidly than with other iodized fats. It is said to be less likely to produce gastric irritation than ordinary iodids. It is supplied only in the form of Tablets Lipiodine—Ciba, 0.3 Gm. A. Klipstein & Company, New York (*Jour. A. M. A.*, June 30, 1917, p. 1985).

During June the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Nonofficial Remedies:

Borcherdt Malt Extract Company:

Borcherdt's Malt Olive.

A. Klipstein & Company:

Lipiodine "Ciba."

Eli Lilly & Company.

Pasteur Antirabic Preventive Treatment (Harris Modification).

Horace North:
Citresia.

H. K. Mulford Company:
Hay Fever Pollenin Fall—Mulford.
Hay Fever Pollenin Spring—Mulford.

BOOK REVIEWS

Botanic Drugs: Their Materia Medica, Pharmacology and Therapeutics. By Thomas S. Blair, M. D., Editor *Medical Council*; Author of 'Public Hygiene,' 'A practitioner's Handbook of Materia Medica and Therapeutics,' and 'Pocket Therapeutics'; formerly Neurologist to Harrisburg (Pa.) Hospital. Large type; fully indexed; 394 pages. Therapeutic Digest Pub. Co., Cincinnati, 1917. Price, \$2.00.

Doctor Blair's little book covers its subject quite fully and includes not only our native drugs but foreign ones as well, when derived from a botanic source. His introduction is interesting reading, and he gives due credit to the Eclectic School for keeping this class of remedies alive. The work proper comprises three parts, the first being devoted to pharmaceutical considerations, the second to pharmacology, while the third presents botanic remedies and is arranged in alphabetical order. The various agents considered are concisely treated, the essential points being well presented both from the pharmacologic and therapeutic sides. He states that "some one or two defined purposes actually accomplished by a drug should include it in our lists," but a drug reputed to do fifty things, but none of them well, he believes should be deleted. While referring to the opinions and studies of others, he in many cases calls upon his personal experience, and his summing up of the position of certain drugs, whose value runs the range from extravagant praise to utter condemnation, seems judicious. The book contains nearly 400 pages, is of convenient size, and is a desirable addition to our therapeutic works.

J. B. McG.

ACKNOWLEDGMENTS

Musser-Kelly—Practical Treatment, Vol. IV. By 76 eminent specialists. Edited by John H. Musser, Jr., M. D., Associate in Medicine, University of Pennsylvania, and Thomas C. Kelly, M. D., Instructor in University of Pennsylvania. Desk index to the complete set of four volumes sent with this volume. Octavo, 1,000 pages. Illustrated. W. B. Saunders Co., Philadelphia, 1917. Price, \$7.00 net.

The Practical Medicine Series. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of Charles L. Mix, A. M., M. D., Professor of Physical Diagnosis in the Northwestern University Medical School. Vol. II, General Surgery, Edited by Albert J. Ochsner, M. D., F. R. M. S., LL. D., F. A. C. S., Surgeon-in-Chief Augustana and St. Mary's of Nazareth Hospitals; Professor of Surgery in the Medical Department of the State University of Illinois. Series 1917. The Year Book Publishers, Chicago, 1917. Price, \$2.00.

Some Personal Recollections of Dr. Janeway. By James Bayard Clark. G. P. Putnam's Sons, New York, 1917. Price, \$1.00.

Proceedings of The Medical Association of the Isthmian Canal Zone for the Half Year—January, 1916, to June, 1916, Vol. IX, Part 1. The Health Department, The Panama Canal, Publishers.

MEDICAL NEWS

The Annual Meeting of Alienists and Neurologists will be held Monday, July 9th, to Thursday, July 12th, 1917, in the Red Room, LaSalle Hotel, Chicago, under the auspices of the Chicago Medical Society. Dr. George A. Zeller will act as chairman. The program will be mailed June 28th, with abstract of each paper. Contributors to the program are solicited. This is a society without a membership fee. Address, Secretary A. & N., Room 1218, 30 No. Michigan Ave., Chicago.

Resolution of the American Society for the Control of Cancer.—Washington, D. C., June 28, 1917.—A letter recently received by Director Sam. L. Rogers, of the Bureau of the Census, Department of Commerce, from Mr. Curtis E. Lakeman, Executive Secretary of the American Society for the Control of Cancer, conveys the information that the National Council of that society, at its meeting at the Harvard Club, New York City, on June 4, 1917, unanimously adopted the following resolution:

"Resolved, That the American Society for the Control of Cancer strongly commends the action of the U. S. Bureau of the Census in publishing its notable report on the mortality from cancer in the U. S. Registration Area in 1914, and records its appreciation of the courteous co-operation of the Director of the Census and all the members of his staff who contributed to the compilation of this unique volume, which represents an unparalleled contribution to the statistical study of malignant disease, and has already furnished the basis for many promising special investigations."

Important Medical Position—Chief Medical Examiner of New York City.—The Municipal Civil Service Commission of New York City announces an examination for Chief Medical Examiner, for which applications will be open in a week or two. Full particulars and applications may be obtained at Room 1400, Municipal Building. The examination is open to all citizens of the United States, but persons accepting appointment must thereafter reside in the State of New York. The compensation is \$7,500 annually for full time service, and candidates must be at least 30 years of age before the closing date for the receipt of applications.

The incumbent of this position will be in charge of the office of the Chief Medical Examiner of the City of New York, and will perform the duties heretofore performed by the Coroners of the various boroughs. Candidates must have a degree from an approved institution, and present evidence of having done, in an official connection, at least *ten* years' work in the pathological laboratory of a recognized medical school, hospital, asylum or public morgue, or in other corresponding official capacity. They must have performed at least 1,000 autopsies. Special consideration will be given to administrative experience, preparation and presentation of evidence in court, and definite published contributions to the science of legal medicine. Copies of such publications should be submitted with the application.

The examination will consist of a practical test with a weight of 3, 75% required, and an oral test with a weight of 3, 70% required. In the practical test, candidates will be required to perform an autopsy and to report in writing on their findings. Candidates will appear before an examining board for the oral test as to their personal qualifications and fitness for the position, including a thorough cross-examination.

This position is one of the most important in civil service in the medical and legal lines and the substantial salary and splendid opportunity offered should attract candidates of high standing in the medical profession.

United States Civil Service Examinaion—Anatomist.—The United States Civil Service Commission announces an open competitive examination for anatomist, for both men and women, on July 11, 1917, at the places mentioned in the list printed hereon. A vacancy in the Army Medical Museum, Office of the Surgeon General, Washington, D. C., at \$1,600 a year, and future vacancies requiring similar qualifications will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promoion.

As an insufficient number of applications were filed for the examination of May 16, 1917, qualified persons are urged to apply.

Competitors will be examined in the following subjects, which will have the relative weights indicated:

Subject	Weights
1. Anatomy (including technic of dissection) and pathogenicity of mosquitoes	25
2. Gross pathology (including preparation of museum specimens)....	20
3. Bacteriology (including care and use of microscope).....	20
4. Pathologic histology	15
5. Photomicrography	5
6. Training and experience.....	15
Total	100

As prerequisites for consideration for this position the appointee must have at least a collegiate degree, and have a thorough knowledge of the anatomy (and be experienced in the dissection) of disease-bearing mosquitoes of Southern United States, Panama, and the West Indies, and the Phillipine Islands, and the relation of mosquitoes to the transmission of disease. A knowledge of pathology, bacteriology, and pathologic histology is also required, and the appointee must be capable of making photomicrographs, must understand microscopes, and be able to prepare, card, and keep in order museum specimens.

Applicants must have reached their twenty-first birthday on the date of the examination.

Applicants must be examined in the State or Territory in which they reside and have been actually domiciled in such State or Territory for at least one year previous to the examination, and must have the county officer's certificate in the application form executed.

Applicants must submit to the examiner on the day of the examination their photographs, taken within two years, securely pasted in the space provided on the admission cards sent them after their applications are filed. Tintypes or proofs will not be accepted.

This examination is open to all citizens of the United States who meet the requirements.

Applicants should at once apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C., or to the secretary of the United States Civil Service Board at any place mentioned in the list printed hereon. Applications should be properly executed, excluding the medical certificate, and filed with the Commissioner at Washington in time to arrange for the examination at the place selected by the applicant. The exact title of the examination as given at the head of this announcement should be stated in the application form.

Observations On the Giant Cells in Tuberculosis. James H. Warren, *J. Med Research*, 1917: XXXVI: 225, .

By means of the Bielschowsky silver impregnation stain, Warren has brought further evidence that the endotheloid cells found in tubercles are of reticular tissue origin and the stain shows reticular fibrils within their cytoplasm. The smaller giant cells also show reticular fibrils in their cytoplasm and this together with their nuclear characteristics leads him to the conclusion that they are formed by fusion of cells of reticular tissue origin. Warren considers it entirely possible that the cellular reaction in tuberculosis is local and due to stimulation of reticular tissue cells.

M. L. R.

DEPARTMENT OF THERAPEUTICS

Conducted by J. B. McGEE, M. D., Cleveland

Tetanus: F. Golla, in the *Lancet* for May 5, states that the War Office Committee for the Study of Tetanus has emphasized the advantages of serum treatment in tetanus by the intrathecal method. In a series of experiments made on cats and on rabbits injected with equivalent doses of tetanus toxin, the results obtained show the indubitable superiority of the intravenous and intrathecal routes over the subcutaneous. Such superiority may be attributed to the slow absorption of tetanus antitoxin injected subcutaneously. It is shown that even when injected 24 hours later, antitoxin by the intrathecal route is more efficient than the subcutaneous injection. None of the results gave any encouragement to the view that toxin may be neutralized once it has entered the nervous system. The whole problem of the serum therapy of tetanus appears to be that of cutting off fresh supply of toxin by bringing antitoxin into relation with the focus of infection as rapidly as possible. In animals with a high resistance to tetanus, such as cats and rabbits, the symptoms develop comparatively slowly; in the susceptible guinea pig, development is much more rapid, even if we make allowance for the shorter nerve-path traversed by the toxin to reach the central nervous system. Man is much more akin in susceptibility to the guinea pig, and in the unprotected subject, symptoms may develop from a local spasm to generalized tetanus with startling rapidity. The greater swiftness with which antitoxin can be brought into action by intrathecal and by intravenous administration, rather than by subcutaneous, should, therefore, be of paramount importance in treatment. This fact has been to some extent obscured during the present war owing to prophylactic use of serum having converted man from a susceptible to a resistant organism, and this is evinced in the majority of cases of a clinical picture of tetanus, which had previously been very rare in the human subject; though it is the rule in highly resistant animals, as the cat and the rabbit. The disease first manifests itself in local spasms of the muscles supplied by the spinal segments directly in nervous continuity with the wound. It may either remain localized or more or less slowly invade the whole nervous system. In such cases the better results obtained by intrathecal administration are not always so apparent, but since it is impossible to say whether or not a sudden rapid invasion of the whole central nervous system may develop, it would appear to be courting needless risks to delay bringing into action of antitoxin by adopting the subcutaneous method.

Substitutes for Salvarsan: The *Therapeutic Gazette*, in its May number, comments editorially on substitutes for salvarsan and neosalvarsan in the treatment of syphilis. The difficulties which have existed during the last few months in obtaining salvarsan and neosalvarsan have naturally turned the minds of the profession to the question

as to whether satisfactory substitutes could be utilized. In Canada a preparation virtually identical with salvarsan is now manufactured and widely sold, and during the time that salvarsan and its ally were practically unobtainable in this country. Schamberg, of Philadelphia, placed upon the market a substitute or identical preparation, which since the introduction of a new supply of salvarsan has had to be withdrawn under the patent law. Both of these preparations have given fully as good results as those made in Germany, but at present cannot be obtained in the United States. Notwithstanding the high hopes which we had when salvarsan was introduced, to the effect that this new compound would destroy every spirochete in the body, hopes which were speedily dashed to the ground by experience, it would nevertheless appear that salvarsan or neosalvarsan is the most efficient destroyer of the spirochete that we have, unless possibly sodium salvarsan, a still newer compound, proves ultimately equally efficacious. So far as the cacodylate of sodium is concerned, the point is not as to whether the patient improves under its use, but whether the spirochetæ in his body are promptly destroyed, so that he ceases to be a disseminator of the disease and ceases to be a hotbed for the multiplication of the spirochetæ, which will attack his own tissues. Recent investigations seem to indicate that as a destroyer of spirochetæ, cacodylate of sodium is useless. Nichols, Cole and others have proved that its spirocheticidal property is almost, if not quite, *nil*, that it does not change a positive Wassermann into a negative test, nor heal the mucous patches which so frequently disseminate the disease. As to salvarsan and neosalvarsan, Trimble and Rothwell believe they have proved that there is no great difference in the value of the two preparations, and because of the ease with which neosalvarsan is administered and the small quantity of liquid which must be injected when it is employed, they believe it is the superior compound. The general opinion is, however, that to produce the results induced by salvarsan a larger dose is required. It is well to note that Trimble and Rothwell believe that four injections of salvarsan or neosalvarsan in treating syphilis are quite inadequate, and the use of these drugs, unless followed by mercury, is also inadequate. These facts cannot be too widely disseminated.

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Diuresis and diaphoresis were also obtained, and were most pronounced. In the majority of his cases diaphoresis was so marked as to evoke comment or concern lest the patient catch fresh cold. Hypodermoclysis is unnecessary, and as Fisher notes it may invite sloughing.

Corpus Luteum: H. E. Happel, in the *Medical Record* for May 19th, presents the present condition of the therapeutic use of the extract of corpus luteum. Corpus luteum therapy was begun in 1904. The extract obtained from ovaries of pregnant animals is undoubtedly more potent than that from the non-pregnant. He summarizes its uses as follows: Extract of corpus luteum must be given over a long period of time, and in sufficient dosage, according to the needs of the patient. It produces no toxic effect, except a feeling of fulness of the head or vertigo, and is not cumulative. It is the best remedy for the relief of the nervous symptoms of the natural menopause and for their prevention and relief in postoperative menopause. It is of the greatest value in the treatment of irregular or scanty menstruation in young women, and alleviates the neurasthenic symptoms so often associated. It relieves dysmenorrhoea in young girls and nulliparae not due to a pathological lesion. Benefit in nausea and vomiting of pregnancy has been reported. The only disadvantage is the cost, which precludes its use in many cases where it is strongly indicated.

Bronchial Asthma: In the June number of the *American Journal of Medical Sciences*, Montgomery H. Sicard considers the treatment of bronchial asthma by vaccination, with report of cases. Measures for cure of asthma have generally proved useless; to help the individual attacks, adrenalin, morphin, strychnin, atropin, lobelia, potassium iodide, stramonium and asthma powders have all been extensively used, but no means of preventing future attacks has been found. Asthma is undoubtedly in some cases an expression of anaphylaxis; clinically it resembles the hyper-susceptibility produced in animals by the injection of a foreign proteid. Another source of attack (with which he has been working) is due to the presence of bacteria, primarily streptococcus viridans, or streptococcus hemolyticus, secondarily micrococcus catarrhalis. Whatever the variety of germ, an autogenous vaccine will cure the attacks. It is best given twice a week, in constantly increasing strength, for twelve to twenty injections. It is much better to give such dosage that local reaction occurs, although he has had cases which showed no local reaction. On the other hand, he has had cases which showed no improvement until doses were given in sufficient quantity to cause local reaction. He has adopted the practice of beginning with 100,000,000 in adults, and feeling his way cautiously until finding the dose that caused local reaction and then provoking a local reaction on every injection. If at any time the local reaction be too severe, or if general symptoms occur in the form of fever, chilliness or general malaise, or aches, or increase in the asthma, he allows a rest for a period before beginning again, using his judgment as to continuing the same dosage or dropping back to a smaller one. It is better to avoid going back to a smaller one; 1,000 million is often far enough to carry them, although more obstinate cases may require 2,000 million, and he has carried them to 3,000 million and higher. It is very striking to see the asthma clear up after the first injection, as has happened in a number of his cases. The longest period of cure he has to report is two years. He has been struck with the fact that streptococcus seems to be the chief offender. He has had no pneumococcus cases. Micrococcus catarrhalis, he is convinced, is usually a mouth infection in asthma, and vaccination by it has little action on the attacks in a mixed infection. Babcock reports excellent results in a case of mixed infection, in which he used a mixed vaccine of pneumococcus, streptococcus and an anerobic bacillus. After using for a time, semi-weekly, it is well to make the intervals weekly.

The Menopause: In the June number of the *American Journal of Clinical Medicine*, William Rittenhouse writes that the whole subject of the menopause, as well as of disturbances of health so often following its inception, is an important one. The majority of women suffer at this time more or less disturbance of health. With some it is merely a discomfort, but it may vary from this degree to serious and even fatal disease.

Disordered function of the nervous system commonly is present. These nervous disturbances, while not as a rule serious, nevertheless are capable of causing a great deal of suffering and of changing a sane and normal woman into an irritable, fretful and complaining invalid, overwhelmed with melancholy, a burden to herself and a trial to her friends. One of the commonest symptoms is that disturbance of the vasomotor nerves which these patients call "hot flashes." Many times a day a wave of heat seems to pass over the whole body; the skin becomes deeply flushed, and the patient feels as if she must have fresh air or else suffocate. A great variety of nervous symptoms are possible at this time, as the entire nervous system or any part of it may be affected through the sympathetic system by the changes taking place in the reproductive organs. No matter how large a doctor's experience may have been, he is always liable to meet something new in this line. He details a case that simulated exophthalmic goitre so closely as to deceive several good diagnosticians. He suspected that the climacteric was the probable cause and treatment with this end in view was so satisfactory that in three months she was, to all intents and purposes, well. His sheet-anchor in the various disturbances of the menopause is the formula known as Baer's sedative—valerian, sumbul and asafetida, one grain of each. He has experimented with each drug separately, but did not get the same good results as from the combination. Every form of nervous disorder brought on by the change of life is benefited by this line of treatment. Of course, if there is indication for special treatment, he employs it. He uses it in the form of tablets, sugar-coated and containing one grain each of the extract valerian, extract sumbul and asafetida. While he uses it chiefly in the neuroses of the menopause, he finds it also of value and preferable to the bromides, in nervous and hysterical conditions, at any time, in both sexes.

Heroin: The *Medical Council* for February calls attention to the fact that the United States Public Health Service has directed its medical officers to cease using heroin and to turn in any supplies on hand, and it is said the army and navy medical services are contemplating similar action. A committee of the Prison Reform Association proposes introducing into Congress a bill absolutely prohibiting the manufacture and sale of heroin in the country. To be effective, such a bill would, after enactment into law, require State legislation along the same line. The writer of the article states that when heroin was introduced he used it and was within a short time seriously alarmed over its action in two cases in the dose of 1/6 grain then recommended. Later a case nearly resulted fatally from 1/32 grain doses. She was taking one of the proprietary heroin-bearing cough remedies, and not exceeding the dosage recommended. One of his friends died from but two doses of 1/16 grain heroin in combination with acetanilid, the combination being a proprietary tablet. He has also seen the deplorable effects of heroin when taken by addicts. Heroin possesses all the disadvantages of morphin, being as effective in restraining cough, but not more so, but very dangerous as a habit-inducing agent. Bastedo asserts that codein is much superior to heroin in relieving cough, and his clinical observations abundantly support his contention.

NEW AND NONOFFICIAL REMEDIES

Kephalin—Armour.—The hemostatic phosphatid obtained from spinal cord and brain tissue of mammals. It is essentially the same as Brain Lipoid, N. N. R. For a discussion of the actions and uses see *New and Nonofficial Remedies*, 1917, p. 124, under "Fibrin Ferments and Thromboplastic Substances (Kephalin)." Kephalin-Armour is applied freely to bleeding or oozing surfaces in 1 to 2 per cent suspensions in physiological sodium chlorid solution. Armour & Co., Chicago (*Jour. A. M. A.*, June 2, 1917, p. 1625).

Thorium Nitrate.—A white substance, very soluble in water and alcohol. Soluble thorium salts resemble alum in their local astringent and irritant

properties. They are not absorbed from the alimentary canal. The non-precipitant double salts of thorium are practically non-toxic, even intravenously. Thorium salts are fairly radioactive.

Thorium Sodium Citrate Solution.—Prepared by dissolving thorium nitrate 10 Gm., and sodium citrate, 15 Gm., in water, neutralizing with sodium hydroxide and diluting to 100 Cc. Being impervious to Roentgen rays, the solution is used to obtain cystograms of the renal pelvis and urinary bladder.

Thorium Solution for Pyelography—H. W. and D., 10 per cent.—It is the same as thorium citrate solution. Prepared by Hynson, Westcott & Dunning, Baltimore, Md.

Stronger Thorium Sodium Citrate Solution.—Prepared by dissolving thorium nitrate, 15 Gm., sodium citrate, 22.5 Gm., in water neutralizing with sodium hydroxide, and diluting to 100 Cc. It is used for obtaining urethral pyelograms.

Thorium Solution for Pyelography.—H. W. and D., 18 per cent.—It is the same as thorium citrate solution. Westcott & Dunning, Baltimore Md. (*Jour. A. M. A.*, June 16, 1917, p. 1817).

Betanaphthol Benzoate—Anthony Hammond Chemical Works, Inc.—A brand of betanaphthol benzoate which complies with the N. N. R. standard for this drug. Anthony-Hammond Chemical Works, Inc., New York City.

Calcium Cacodylate.—The calcium salt of cacodylic acid containing from 43.5 to 48 per cent of arsenic in the form of cacodylic acid and free from arsenite, arsenate and monomethylarsenate. It has the mild arsenic action of cacodylates. Calcium cacodylate is white, almost odorless, and very soluble in water.

Ampuls Calcium Cacodylate Solution—Mulford.—Each ampule contains calcium cacodylate 0.045 Gm. in 1 Cc. The H. K. Mulford Co., Philadelphia, Pa.

Chlorazene Surgical Cream.—It contains chlorazene, 1 Gm., in 100 Gm. of a base composed of sodium stearate, 15 per cent, and water, 85 per cent. The Abbott Laboratories, Chicago.

Borcherdt's Malt Extract with Cod Liver Oil.—A liquid composed of cod liver oil, 20 per cent, and Borcherdt's Malt Extract Plain, 80 per cent. The Borcherdt Malt Extract Co., Chicago.

Borcherdt's Malt Extract with Creosote.—100 Cc. contain beechwood creosote, 4 minims per fluidounce, in Borcherdt's Malt Extract Plain. The Borcherdt Malt Extract Co., Chicago.

Borcherdt's Malt Extract with Cascara Segrada.—100 Cc. contain cascara segrada, 60 grains per fluidounce, in Borcherdt's Malt Extract Plain. The Borcherdt Malt Extract Co., Chicago (*Jour. A. M. A.*, June 23, 1917, p. 1911).

Lipiodine—Ciba.—The ethyl ester of iodobrassicidic acid containing 41 per cent of iodine. Lipiodine—Ciba is odorless, tasteless, insoluble in water but very soluble in fatty oils. When administered, it is absorbed almost completely and excreted more slowly than inorganic iodids but more rapidly than with other iodized fats. It is said to be less likely to produce gastric irritation than ordinary iodids. It is supplied only in the form of Tablets Lipiodine—Ciba, 0.3 Gm. A. Klipstein & Company, New York (*Jour. A. M. A.*, June 30, 1917, p. 1985).

During June the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Nonofficial Remedies:

Borcherdt Malt Extract Company:

Borcherdt's Malt Olive.

A. Klipstein & Company:

Lipiodine "Ciba."

Eli Lilly & Company.

Pasteur Antirabic Preventive Treatment (Harris Modification).

Horace North:
Citresia.

H. K. Mulford Company:
Hay Fever Pollenin Fall—Mulford.
Hay Fever Pollenin Spring—Mulford.

BOOK REVIEWS

Botanic Drugs: Their Materia Medica, Pharmacology and Therapeutics. By Thomas S. Blair, M. D., Editor *Medical Council*; Author of 'Public Hygiene,' 'A practitioner's Handbook of Materia Medica and Therapeutics,' and 'Pocket Therapeutics'; formerly Neurologist to Harrisburg (Pa.) Hospital. Large type; fully indexed; 394 pages. Therapeutic Digest Pub. Co., Cincinnati, 1917. Price, \$2.00.

Doctor Blair's little book covers its subject quite fully and includes not only our native drugs but foreign ones as well, when derived from a botanic source. His introduction is interesting reading, and he gives due credit to the Eclectic School for keeping this class of remedies alive. The work proper comprises three parts, the first being devoted to pharmaceutical considerations, the second to pharmacology, while the third presents botanic remedies and is arranged in alphabetical order. The various agents considered are concisely treated, the essential points being well presented both from the pharmacologic and therapeutic sides. He states that "some one or two defined purposes actually accomplished by a drug should include it in our lists," but a drug reputed to do fifty things, but none of them well, he believes should be deleted. While referring to the opinions and studies of others, he in many cases calls upon his personal experience, and his summing up of the position of certain drugs, whose value runs the range from extravagant praise to utter condemnation, seems judicious. The book contains nearly 400 pages, is of convenient size, and is a desirable addition to our therapeutic works.

J. B. McG.

ACKNOWLEDGMENTS

Musser-Kelly—Practical Treatment, Vol. IV. By 76 eminent specialists. Edited by John H. Musser, Jr., M. D., Associate in Medicine, University of Pennsylvania, and Thomas C. Kelly, M. D., Instructor in University of Pennsylvania. Desk index to the complete set of four volumes sent with this volume. Octavo, 1,000 pages. Illustrated. W. B. Saunders Co., Philadelphia, 1917. Price, \$7.00 net.

The Practical Medicine Series. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of Charles L. Mix, A. M., M. D., Professor of Physical Diagnosis in the Northwestern University Medical School. Vol. II, General Surgery, Edited by Albert J. Ochsner, M. D., F. R. M. S., LL. D., F. A. C. S., Surgeon-in-Chief Augustana and St. Mary's of Nazareth Hospitals; Professor of Surgery in the Medical Department of the State University of Illinois. Series 1917. The Year Book Publishers, Chicago, 1917. Price, \$2.00.

Some Personal Recollections of Dr. Janeway. By James Bayard Clark. G. P. Putnam's Sons, New York, 1917. Price, \$1.00.

Proceedings of The Medical Association of the Isthmian Canal Zone for the Half Year—January, 1916, to June, 1916, Vol. IX, Part 1. The Health Department, The Panama Canal, Publishers.

MEDICAL NEWS

The Annual Meeting of Alienists and Neurologists will be held Monday, July 9th, to Thursday, July 12th, 1917, in the Red Room, LaSalle Hotel, Chicago, under the auspices of the Chicago Medical Society. Dr. George A. Zeller will act as chairman. The program will be mailed June 28th, with abstract of each paper. Contributors to the program are solicited. This is a society without a membership fee. Address, Secretary A. & N., Room 1218, 30 No. Michigan Ave., Chicago.

Resolution of the American Society for the Control of Cancer.—Washington, D. C., June 28, 1917.—A letter recently received by Director Sam. L. Rogers, of the Bureau of the Census, Department of Commerce, from Mr. Curtis E. Lakeman, Executive Secretary of the American Society for the Control of Cancer, conveys the information that the National Council of that society, at its meeting at the Harvard Club, New York City, on June 4, 1917, unanimously adopted the following resolution:

"Resolved, That the American Society for the Control of Cancer strongly commends the action of the U. S. Bureau of the Census in publishing its notable report on the mortality from cancer in the U. S. Registration Area in 1914, and records its appreciation of the courteous co-operation of the Director of the Census and all the members of his staff who contributed to the compilation of this unique volume, which represents an unparalleled contribution to the statistical study of malignant disease, and has already furnished the basis for many promising special investigations."

Important Medical Position—Chief Medical Examiner of New York City.—The Municipal Civil Service Commission of New York City announces an examination for Chief Medical Examiner, for which applications will be open in a week or two. Full particulars and applications may be obtained at Room 1400, Municipal Building. The examination is open to all citizens of the United States, but persons accepting appointment must thereafter reside in the State of New York. The compensation is \$7,500 annually for full time service, and candidates must be at least 30 years of age before the closing date for the receipt of applications.

The incumbent of this position will be in charge of the office of the Chief Medical Examiner of the City of New York, and will perform the duties heretofore performed by the Coroners of the various boroughs. Candidates must have a degree from an approved institution, and present evidence of having done, in an official connection, at least *ten* years' work in the pathological laboratory of a recognized medical school, hospital, asylum or public morgue, or in other corresponding official capacity. They must have performed at least 1,000 autopsies. Special consideration will be given to administrative experience, preparation and presentation of evidence in court, and definite published contributions to the science of legal medicine. Copies of such publications should be submitted with the application.

The examination will consist of a practical test with a weight of 3, 75% required, and an oral test with a weight of 3, 70% required. In the practical test, candidates will be required to perform an autopsy and to report in writing on their findings. Candidates will appear before an examining board for the oral test as to their personal qualifications and fitness for the position, including a thorough cross-examination.

This position is one of the most important in civil service in the medical and legal lines and the substantial salary and splendid opportunity offered should attract candidates of high standing in the medical profession.

United States Civil Service Examinaion—Anatomist.—The United States Civil Service Commission announces an open competitive examination for anatomist, for both men and women, on July 11, 1917, at the places mentioned in the list printed hereon. A vacancy in the Army Medical Museum, Office of the Surgeon General, Washington, D. C., at \$1,600 a year, and future vacancies requiring similar qualifications will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promoion.

As an insufficient number of applications were filed for the examination of May 16, 1917, qualified persons are urged to apply.

Competitors will be examined in the following subjects, which will have the relative weights indicated:

Subject	Weights
1. Anatomy (including technic of dissection) and pathogenicity of mosquitoes	25
2. Gross pathology (including preparation of museum specimens)....	20
3. Bacteriology (including care and use of microscope).....	20
4. Pathologic histology	15
5. Photomicrography	5
6. Training and experience.....	15
Total	100

As prerequisites for consideration for this position the appointee must have at least a collegiate degree, and have a thorough knowledge of the anatomy (and be experienced in the dissection) of disease-bearing mosquitoes of Southern United States, Panama, and the West Indies, and the Phillipine Islands, and the relation of mosquitoes to the transmission of disease. A knowledge of pathology, bacteriology, and pathologic histology is also required, and the appointee must be capable of making photomicrographs, must understand microscopes, and be able to prepare, card, and keep in order museum specimens.

Applicants must have reached their twenty-first birthday on the date of the examination.

Applicants must be examined in the State or Territory in which they reside and have been actually domiciled in such State or Territory for at least one year previous to the examination, and must have the county officer's certificate in the application form executed.

Applicants must submit to the examiner on the day of the examination their photographs, taken within two years, securely pasted in the space provided on the admission cards sent them after their applications are filed. Tintypes or proofs will not be accepted.

This examination is open to all citizens of the United States who meet the requirements.

Applicants should at once apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C., or to the secretary of the United States Civil Service Board at any place mentioned in the list printed hereon. Applications should be properly executed, excluding the medical certificate, and filed with the Commissioner at Washington in time to arrange for the examination at the place selected by the applicant. The exact title of the examination as given at the head of this announcement should be stated in the application form.

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DIAGNOSIS AND TREATMENT OF CONGENITAL PYLORIC STENOSIS

BY CLIFFORD G. GRULEE, M. D., AND DEAN D. LEWIS, M. D.

CHICAGO, ILLS.

(Continued from July issue)

Diagnosis.

The diagnosis of congenital pyloric stenosis is usually easily made, but it is often difficult to state why this is the case. This is probably due to the fact that at the time of life when the symptoms develop there are few other conditions which have to be considered. When the symptoms become pronounced there is but one condition which has to be considered in differential diagnosis, and that is pylorospasm. Obstruction of the pylorus by a tumor projection into the pylorus, as in the case described by Downes, and kinking of the pylorus by an adhesion of peritoneal band, as described by Grulee and Kelley, are extremely rare and do not have to be considered to any extent in the differential diagnosis.

Vomiting is the most striking and alarming of all the symptoms and is the one which convinces us of the seriousness of the condition. This symptom usually begins about the third week, but we have seen one case in which the vomiting began in the middle of the second week. It was so marked that the infant emaciated rapidly and an operation was performed on the twenty-third day. Sometimes the vomiting is preceded for a few days by regurgitation of food. When vomiting is established it becomes projectile in type. Milk or water may be projected a foot or more with considerable force. This vomiting is accompanied by marked peristaltic waves.

Accompanying the vomiting and the direct result of the same is a decreased passage of feces. This has been called a constipation. It is not in the true sense of the word, but is due to a decreased quantity of fecal formation because of the small quantity of food reaching the bowel. At times there may be an increased number of stools, but the total quantity of fecal material passed during the twenty-four hours is reduced. As a rule the number of stools is diminished. At times the stools are greenish, at times brownish. They may contain mucus, but few curds, presenting the picture of a so-called hunger stool. Associated with the decrease in the amount of feces, there is a decreased absorption of water and consequently a concentrated urine is passed in small amounts. In some cases this may be of considerable significance, since the vomiting accounts for the decreased absorption of water.

The general condition of these infants is oftentimes strikingly good, when the degree of starvation resulting from the vomiting is taken into consideration. They practically never have the brownish or greyish hue which is seen so frequently in cases of marasmus with the same degree of emaciation. The skin is nearly always clear, usually pale, and the subcutaneous tissue shows a depletion in proportion to the severity of the vomiting. The general appearance of the infant is rather cheerful than otherwise. They are not the disturbed, irritated infants, such as those suffering with the usual gastro-intestinal disturbances. They are, of course, extremely hungry. Only a small proportion suffer from an accumulation of gas. The sleep is not disturbed and is usually sound, in this way presenting a marked contrast to those children suffering from nutritional disturbances.

The temperature is as a rule within normal limits. When the infant becomes much emaciated the temperature may be subnormal. The tendency to subnormal temperature is, however, not nearly so marked in this condition as in the severe forms of marasmus. The pulse is usually rapid rather than slow.

The weight curve is of considerable interest. Not infrequently it has a steady though not marked upward trend, following the initial loss after birth. A satisfactory weight condition continues but a short time after vomiting begins. The weight curve then tends to become stationary or may show somewhat slight falls. If the case is watched carefully, a day comes then when the loss of weight is much more rapid than it had been previously. A total

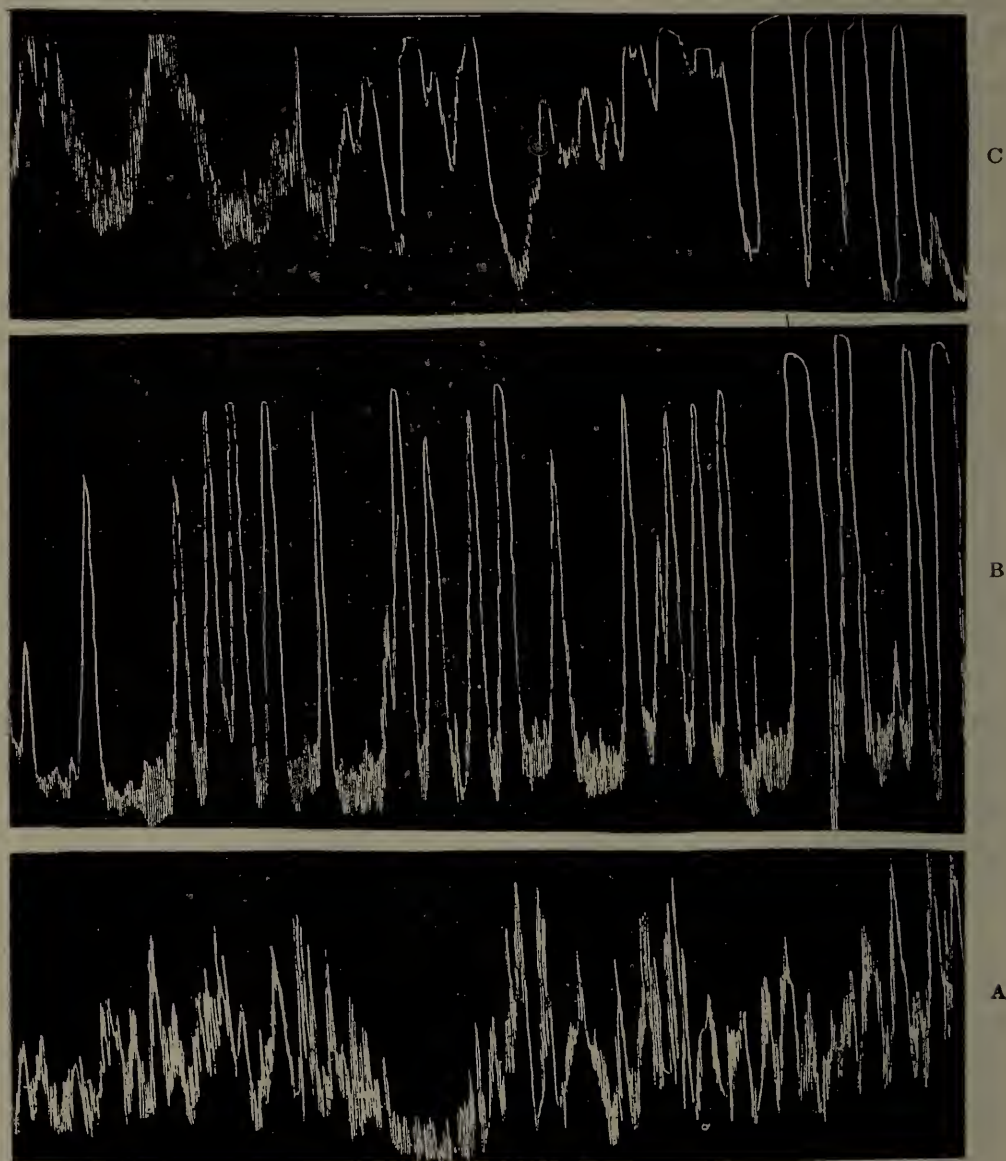
loss of 200 grams is not uncommon. This rapid loss of weight is a danger signal and, when it occurs, it is in our opinion exceedingly poor judgment to delay operation.

Physical Signs. It is usual in these cases to see quite distinct epigastric distension. This is present whether food has been taken or not, but is, of course, increased by the ingestion of food. After food is taken the stomach outline becomes very distinct. Soon after the outline becomes distinct, irregularities appear which begin just below the costal margin on the left side and pass gradually across the epigastrium to the region of the pylorus. These peristaltic waves increase in intensity so that in marked instances they may become 2 c.m. in height. Frequently, when the peristaltic waves have reached their greatest intensity, projectile or explosive vomiting occurs, the vomitus being thrown as far as one and one-half to two feet. The time at which peristalsis is visible varies greatly, even in the same case. Oftentimes peristaltic waves cannot be seen, even immediately after a feeding. Considerable patience is not infrequently required in order to observe this phenomenon. As a rule the best way of causing or increasing peristalsis is to give the infant a large quantity of fluid rapidly. The hole in the nipple should be much larger than the child is used to having. In most instances we have used thin barley water, sweetened with saccharine for this purpose. Antiperistalsis is often spoken of in these cases, but in our series it has been very unusual. Even when the stomach has been watched carefully during severe vomiting, it has not been possible in any instance to determine that there is a relationship between the antiperistalsis and the vomiting.

In making a diagnosis of this condition one should try to determine the presence or absence of the pyloric enlargement. In most of our cases we have not been able to determine its presence with certainty. When the enlargement can be palpated it seems not unlike a rather large lymphatic gland. The pyloric enlargement is usually most easily felt when the peristaltic waves are at their height and when they have most nearly approached the pyloric end of the stomach.

The examination of stomach contents in cases of congenital pyloric stenosis has revealed nothing of value. This is probably due to the fact that a test meal which is entirely satisfactory for infants has not yet been prepared. The results obtained by different observers by the examination of stomach contents show that

this method has little or no value in the differentiation of gastric conditions occurring in infancy. It might be supposed that X-Ray examination might be of distinct diagnostic value in these cases, but it has not proven to be of the value we had hoped and in many of our cases we have made careful ones.



Hunger contractions of the stomach of the baby. (A) Normal infant. (B) Pyloric stenosis, Case VIII. (C) Spasms of the pylorus and rumination.

Two things are, however, to be noted: first, there is a delay in the time when the stomach begins to empty, and it is the rule rather than the exception that no food can be demonstrated in the intestine one hour after the ingestion of the bismuth meal; second, there is found in the stomach from six to twelve hours after in-

gestion of the meal a considerable quantity of the bismuth. While these conditions are rather suggestive, they are by no means diagnostic.

The so-called hunger waves of Carlson and Ginsberg would seem to be of some value in diagnosis. The hunger wave is taken in the following way: From forty-five minutes to an hour after feeding there is introduced into the stomach a small catheter to which is attached a small balloon. After introduction into the stomach the balloon is distended so that it fits the stomach quite closely. The catheter is then connected with a drum on which tracings are taken. The child must be asleep or resting quietly while the tracing is being taken. The waves occurring in congenital stenosis are much greater than in a case of pylorospasm with rumination which we observed. It can be seen from what has been stated that the laboratory methods furnish us very few data. The blood picture of these infants is practically normal and urine presents no changes other than the concentration.

Differentiation of this condition offers as its chief difficulty *pylorospasm*. A severe case of pylorospasm, so far as the physical findings are concerned, may so closely simulate a congenital pyloric stenosis as to greatly confuse one. There are frequently, however, in the cases of pylorospasm a few points which are distinctly significant. It is not unusual to see a case which begins in the first few days of life. This is rather unusual in cases of congenital pyloric stenosis. While congenital pyloric stenosis is usually encountered before the third month, pylorospasm is often found in much older infants. We not infrequently see it in infants seven, eight and nine months old. There is in most cases of pylorospasm a definite history of previous gastrointestinal disturbance, usually of a dyspeptic nature. In infants a few weeks of age with pylorospasm the symptoms, such as vomiting, gastric peristalsis and so forth, are much less marked than in a case of congenital pyloric stenosis of the same age. The symptoms in pylorospasm tend to increase in severity as the child becomes older, but the increase is not nearly so rapid as in congenital pyloric stenosis. The X-Ray picture in these cases frequently offers nothing diagnostic, the retention of food being for the same length of time and the food remaining in the stomach quite as long. It would be interesting to note in this connection the following case:

Ethel B., age 10 months, entered the Presbyterian Hospital on the thirtieth of November, 1915, on the service of Dr. Grulee. Her

complaint was vomiting. The child was born on the seventh of February of the same year. The birth weight was asserted to be 5,000 grams. She was the first child, born of normal labor. She was breast fed for five months, when she was weaned because of some infection of the mother's breast. After this she was taken to an Infant Welfare Station and fed according to their rules. Up to two weeks before she had been perfectly normal, when she began to vomit. This vomiting was very marked and occurred after every feeding. It became projectile in type. Temperature during this



Ethel B. Pylorospasm. Three hours after bismuth meal.

time ranged between 99 and 102.5° F. This child showed nothing on physical examination, except what seemed to be a severe gastrointestinal disturbance. On the second of December marked gastric peristalsis was noted, the peristaltic waves being as strong as any which we had noted in cases of congenital pyloric stenosis.

This child went down hill rapidly and died on the twentieth of December. We were not able by any means in our power to check this vomiting, nor were we able to check the severe diarrhoea which accompanied it. On postmortem examination it was found

that there was no enlargement whatever of the pylorus, nor was there thickening of the wall of the stomach. The condition was, therefore, shown to be definitely a pylorospasm.

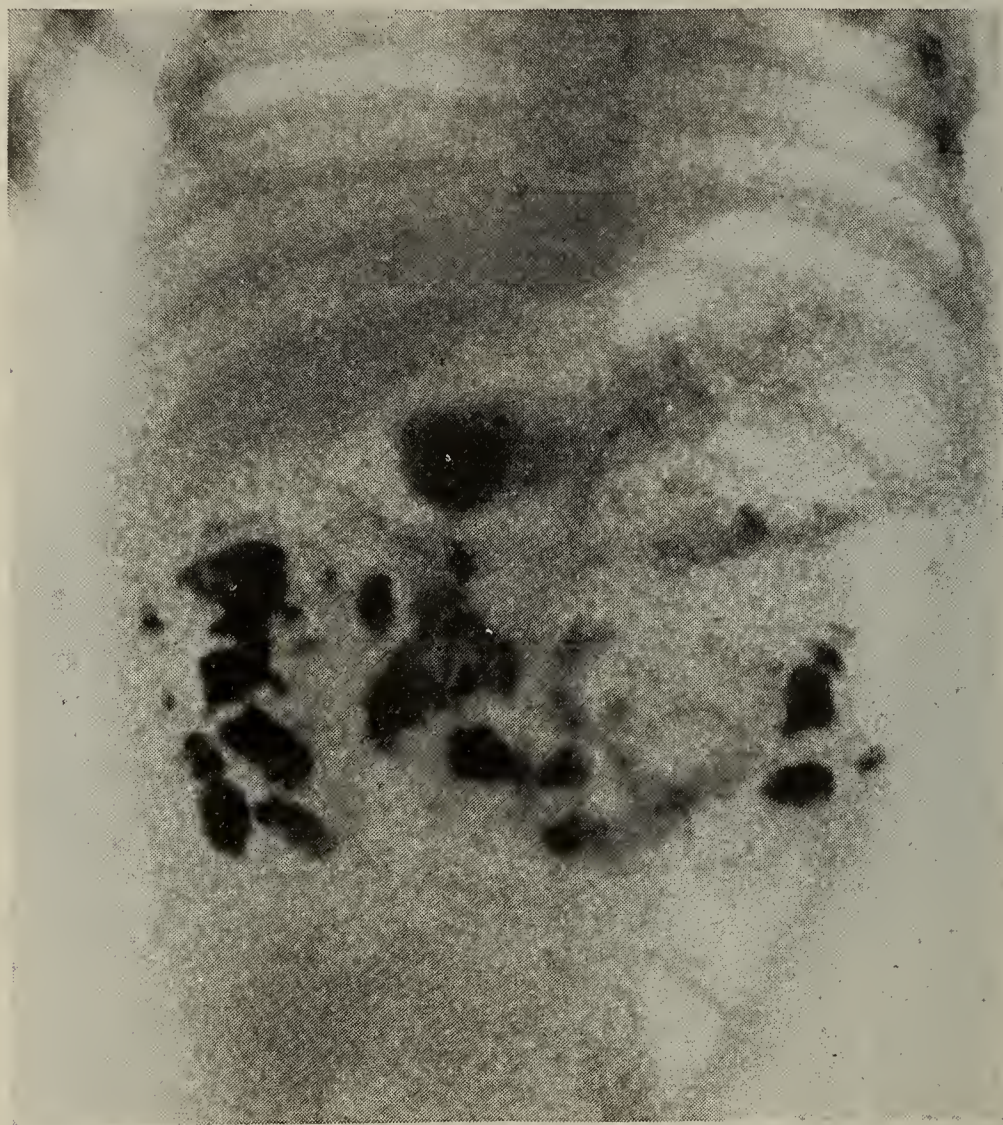
Another condition which we must meet with is that of *uncontrollable vomiting*. These cases are unaccompanied by visible gastric peristalsis, and yet they may offer some question as to diagnosis, as the accompanying history will show:



Ethel B. Pylorospasm. Three and one-half hours after bismuth meal.

Clara B., 10 weeks old, entered the Presbyterian Hospital on the first of December, 1915, on the service of Dr. Grulee. History was that of vomiting with no other appreciable findings. She was the ninth child. Seven others had died in the early months of infancy, all with severe vomiting. The eighth child had had severe vomiting, but had recovered from this and died of pneumonia in another hospital during the time that this child was in the hospital. The mother had had enough breast milk for the infant for about two weeks, and then the amount gradually decreased. The child was taken to an Infant Welfare Station and fed according to their directions. She continued to vomit and was taken to the hospital.

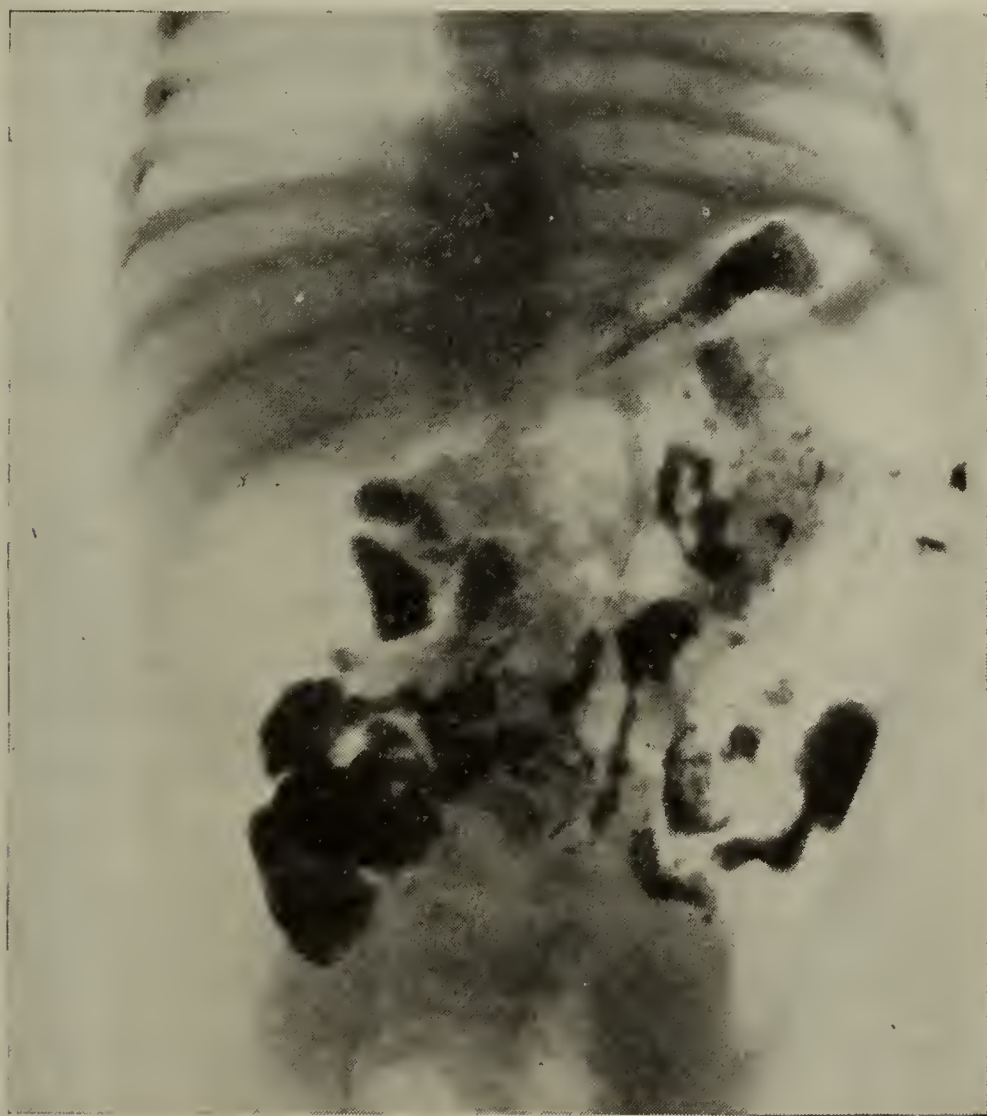
There was nothing special to be noted, except this excessive vomiting with a slight diarrhea. The vomiting was uncontrollable. We were unable to affect it by any means in our power. During the first few days after entrance the baby was examined by several physicians and in each instance a tumor was palpated in the region where one would expect to find the enlargement of congenital pyloric stenosis. This child showed very little if any gastric peristalsis. There was, however, slight rumination on one occasion. The X-Ray pictures showed that the stomach was completely emptied after a comparatively short interval, and that a large amount of food left the stomach within an hour after feeding.



Clara B. Uncontrollable vomiting. One hour after bismuth meal.

In view of the previous history, it was decided to do an exploratory laparotomy on this child, thinking that possibly there might be a congenital pyloric stenosis, although the symptoms did not point in that direction. Such was done by Dr. A. D. Bevan. There was no enlargement or constriction at the pylorus, and the abdomen was closed without any further interference.

Two other conditions present themselves for differential diagnosis. These are so extremely rare that they need only be mentioned. In the first a shortened ligament kinks the bowel just beyond the pylorus. Such a case has been reported by Grulee and Kelley. In these cases there is usually some cessation in the



Clara B. Uncontrollable vomiting. Two hours after bismuth meal.

severity of the vomiting and biliary vomiting is rather common. One of us has seen two such cases since the first one was reported. The second condition is that reported by Downes, where a small tumor was found projecting into pyloric orifice.

Another condition which may be mentioned about which very little is known is *rumination*. This has a very distinctive character, the food being swallowed, then brought up into the mouth and gargled. During this latter process frequently a large portion of the food will be spilled over, the remainder being swallowed again. This sometimes occurs as often as fifty times after a meal, and the quantity of food lost in this way is frequently so great as to endanger life. This condition, too, is very often accompanied by increase of the gastric peristalsis to such a degree that one is able to see the

gastric waves in the upper abdomen, The condition itself, however, is so typical as to cause very little difficulty in diagnosis, as a rule.

Treatment. The great question in the treatment of congenital pyloric stenosis is as to whether these cases must be operated or not. We must take the position that when the diagnosis of congenital pyloric stenosis is made, the indication for operation is definite.

We have had the opportunity of examining the pylorus 256 days after a gastroenterostomy had been performed. The baby died of pneumonia. The gastroenterostomy had apparently functioned perfectly, but the pyloric enlargement had not changed at all. It remained of the same size and consistency as on the day when the operation was performed and evidently the same degree of stenosis existed.

These findings would seem to indicate the futility of the medical treatment usually employed in these cases. When the diagnosis is established the methods which should be employed for the relief of the same are surgical. A few years ago the results of operations for congenital pyloric obstruction were so uncertain that physicians hardly felt justified in recommending surgical treatment. The high mortality even at this time was not entirely due to the operative technic employed, for many of the cases were not recognized until they had become poor surgical risks, and even when recognized medical treatment was continued so long that the infant was turned over to the surgeon for operation as a last resort.

In 1906, Thompson found recorded in the literature 156 cases of congenital pyloric stenosis. To these he added one of his own, making 157. The total number of operations performed up to that time was 89. These may be summarized as follows:

	Number	Recovered	Died	Mortality
Pylorectomy	1	0	1	100%
Divulsion	17	8	9	53%
Pyloroplasty	12	6	6	50%
Gastroenterostomy....	59	29	30	51%
	—	—	—	—
	89	43	46	53.9%

Since this paper was published the mortality has been greatly reduced. Only two of a number of operative procedures which have been practiced have proven to be sufficiently satisfactory to warrant adoption. These are posterior no-loop gastroenterostomy and pyloroplasty.

The largest number of series of cases which have been reported are those of Richter, Scudder and Downes. Posterior gastroenterostomy was employed by each of these surgeons and the mortality rate was 14 per cent, 24 per cent and 32 per cent., respectively. The total number of cases in these three series was 61, with a mortality of 22 per cent.

We have lost three out of seventeen cases operated upon, giving a mortality of 17.6 per cent. In twelve cases a posterior no-loop gastroenterostomy was performed with three deaths. In the last five cases a Rammstedt pyloroplasty has been performed. The first five babies recovered. The sixth died of peritonitis, following opening of the abdominal wound on the morning of the fifth day. The convalescence up to this time had been especially good, and at the autopsy the gastroenterostomy had apparently healed. The seventh baby died at the end of a week from perforation of the anastomosis between the stomach and intestine. The eighth died after forty-eight hours and at the autopsy the cause of death could not be determined.

The gastroenterostomy has been the posterior no-loop type and has been done with clamps. In all of the cases there has been a well marked tumor. We have not hesitated to use clamps in doing the gastroenterostomy, for we have had no difficulty afterwards. Coffey has lost one case in which the stomach wall sloughed off distal to the line on which the clamp was applied. It is difficult to conceive how the small clamps covered with rubber tubing which we employ could cause enough pressure to produce necrosis, as in the case reported by Coffey.

We have had more difficulties in the healing of the abdominal wall than of the gastroenterostomy. Some of this difficulty may be due to the incision employed which passed directly in the median line through the linea alba. Downes recommends an incision through the rectus to the right of the median line. We have had no trouble with the incision since we have used circular strips of adhesive plaster about the abdomen, applied over a roller bandage.

Anesthesia is of prime importance in these cases. Ether has been given by the drop method in fifteen cases and chloroform in one. Chloroform was administered in the ninth case because the baby had a severe nasopharyngeal infection with temperature. We would have postponed the operation until this infection had subsided, but the child was losing ground so rapidly that we feared to do so. None of the babies has suffered shock after the operation.

The lack of shock we believe to be due to the skill with which the anesthesia has been administered by Dr. Isabella Herb. The anesthesia has been very light, but still has been deep enough to permit of doing the anastomosis without difficulty and without forcing the intestines out of the abdomen.

Pyloroplasty as practiced by Rammstedt has been employed by Downes in thirty-five cases. Eight deaths occurred in this series, giving a mortality of 23 per cent. Two died of peritonitis following a modified Rammstedt, in which the stomach was opened and a sound passed through the pylorus into the duodenum. One died twenty hours after operation with symptoms unrelieved, and autopsy revealed a small tumor arising from the muscularis mucosa completely blocking the pylorus. Four cases died in from four to twenty-seven hours. All were practically moribund, and the result was to be expected. One died of inanition on the twenty-sixth day. When this baby was given more than an ounce of food, it would vomit. The smallest and thickest walled stomach yet observed was found at autopsy in this case. Twenty-seven cases of this series were discharged as cured.

Downes believes that partial pyloroplasty has many advantages over gastroenterostomy. The time required to do the former is less than half that required to perform the latter. Feeding may be begun earlier and be pushed more rapidly, post-operative vomiting is less and late complications such as diarrhea and unexplained vomiting do not occur. We have had few if any of the bad post-operative complications such as have been mentioned above.

Postoperative Treatment. Immediately after the return of the patient from the operating room it should be wrapped in a blanket and kept warm, possibly with hot water bags. There has never been any advantage which we could see in any of our cases in raising the foot of the bed, such as have been suggested by Morgan (*Am. Jour. Dis. of Child.*, 1916, XI, p. 245). If the child's condition seems to be poor, which is not frequently the case, a hypodermic of 1/1000 gr. of strychnia is given. In none of our cases has the child returned from the operating room in a state of shock. The time when the child seemed to be the most reduced in point of physical vigor was within thirty-six to forty-eight hours after the operation.

The most important point in the postoperative treatment of these cases is that of feeding. It is usually wise within six hours after operation to attempt to give these children some water by

mouth, this to be followed within two hours by a small amount, perhaps one-half ounce, of breast milk. As a result of these attempts vomiting of a small amount of greenish liquid almost always occurs. This rarely contains the milk which has been ingested, nor the curds of the same. It has been our rule never to feed these children oftener than every four hours, the quantity of food being gradually increased from one-half to three-fourths ounce. Depending upon the severity of the case and persistency of vomiting, it will require from one to two weeks to get the child on the required amount of food. Oftentimes the child is so depleted by the previous course of the disease that it is necessary that the fluid content of the body be kept up. For this purpose it is quite possible to give rectal enemata. A continuous normal saline solution given rectally has proven of value in several of our cases, the tube being removed when the solution was expelled and replaced after a short time. In many cases it has seemed wise to give feedings rectally. For this purpose the only food which can be considered is breast milk. When this is attempted the routine is about as follows: A feeding of one-half to one ounce of breast milk is given rectally. In two hours two or three ounces of normal salt solution; in two hours again the rectal feeding, and so on. There has been with this procedure much less irritation of the bowel than we had expected. In many cases the food thus given has been retained, in others it has been expelled occasionally. The rule has been that the rectal feedings were eminently successful, and in several cases we have felt that they have been responsible for tiding us over the period of danger.

With this postoperative feeding in cases of gastro-enterostomy for congenital pyloric stenosis, we may expect then about the following: The vomiting will continue and will be rather harassing for the first few days, rarely lasting more than ten days, and frequently only four to five days. This vomiting is never projectile in character, but is always a regurgitant vomitus, and is practically always bile stained. Gastric peristalsis frequently may be seen, even after the gastro-enterostomy opening seems to be functioning perfectly. The stools depend largely upon the amount of food taken. The weight of the child depends to a great extent upon the vomiting and upon the amount of food which can be retained by the infant.

Following the operation, of course, there is usually a steady loss of weight for the first few days. As soon, however, as the

vomiting ceases the trend of the weight curve is rapidly upward, and the infants to all intents and purposes progress along the same lines as normal infants of the same age and weight. In fact, it has seemed to us that in many instances they did much better than the average infant, probably because of the care which was given them which was much more exact and much better regulated because of the former condition. Following operation we have seen no advantage in giving drugs other than those for stimulation, such as strychnia, camphorated oil, etc.

It should be said in closing that the ultimate results of the operation are exceedingly good. The general development of the child does not seem to be interfered with by either the pyloroplasty or gastroenterostomy.

AN ELECTRIC HYPOTHESIS OF EXHAUSTION

BY GEORGE W. CRILE, M. D., F. A. C. S.

CLEVELAND

Exhaustion from any cause is the state in which electric energy is not present; is not being generated; or, if generated, is prevented from being utilized.

Thus, if the skin is widely excised; if viscera are widely exposed; if burns destroy the epidermis—the electric energy of the body cannot be utilized, as with the destruction of the non-conducting epidermis, the electric energy is dissipated before it can be used, and exhaustion results. For a similar reason, exhaustion in greater or less degree results from immersion in a warm, moist atmosphere, or in water, the electricity of the body being conducted away from the body more rapidly than it can be fabricated.

If the stored electric energy is discharged or drained by extreme or prolonged exertion, by emotion, by infection, or by prolonged consciousness—deprivation of sleep—then exhaustion results.

If the acid-eliminating organs, the lungs, the liver and the kidneys, are interfered with by injury or disease, then the generation of electric energy is interfered with and polarization—exhaustion—results.

Written in France, June 6, 1917.

A NOTE ON INCIPIENT SCURVY*

BY D. J. MILTON MILLER, M. D.

ATLANTIC CITY, N. J.

This brief paper is not a disquisition upon classical, infantile scurvy. Such a thesis would be an affront to a society devoted to pediatrics. Nor does it embody the results of experimental or research work, such as Alfred F. Hess has given us in his valuable contributions to the symptomatology and nature of scurvy issued by him since 1914. This paper is of entirely different character, being the result of observations made in private work among infants during the past six years. My attention was first drawn to the existence of a type of mild or incipient scurvy, without the well-known stereotyped symptoms of the disorder, in the following case seen by me in 1911: A child, aet. 18 months, had been ailing for several weeks with general fretfulness, loss of appetite and sleep, failure to gain in weight and slight, irregular fever. These symptoms were attributed to teething, but no teeth were erupting. No digestive disturbances were apparent, nor could evidence of tenderness on lifting or moving be discovered, unless fretfulness on being disturbed could be so explained. The knee-jerks were exaggerated. A careful examination of the gums showed them to be perhaps a little dusky, but there was no bleeding or sponginess. There were no petechiae. The infant was taking a high grade, commercially pasteurized milk, with the addition of four tablespoonfuls of a well-known proprietary preparation of dextro-maltose. This preparation was dropped from the dietary and orange juice and potato advised. In a week the child was well, thus establishing, I think, the scorbutic nature of the child's ill-health.

In the summer of 1913, I saw a child of twelve months, whose only symptom was crying, as if in pain, when rolled over on its left side. Firm pressure over the upper left thigh *seemed* also to give pain. The most careful search failed to discover any other abnormality; the infant was, indeed, exceptionally healthy and robust. Inquiry revealed that the mother was pasteurizing the already commercially pasteurized milk. Fresh milk was given and orange juice administered. In a few days all symptoms had disappeared.

*Read before the New Jersey State Pediatric Society, Atlantic City, June 11, 1917.

In the fall of 1914, the following case came under observation: An infant, nine months, had been fed upon milk prepared with peptogenic milk powder, upon which it had thrived. From the beginning of the eighth month, it had ceased to gain, becoming more and more fretful, with loss of appetite and poor sleep. These symptoms were attributed to teething, although no teeth were present. The only suggestive sign was some edema of both lower limbs and, perhaps, slight tenderness on deep pressure over the spines of the tibiae. The urine was normal. Orange juice and fresh milk were given and the peptogenic powder discarded. In a week, all signs of disturbance had disappeared.

Another interesting case was observed in October, 1916. This was a child of ten months, fed upon a proprietary dextro-maltose preparation and pasteurized milk. On this it had done and gained well up to eight and a half months. From this time, however, it had ceased to gain, or gained only slightly. Anorexia then ensued, only half the amount of food being taken. In addition, for the past two or three weeks, there had been slight fever (100.5° at night), with fretfulness and sleeplessness. As usual, the symptoms were attributed to teething, as the two upper incisors were at the time erupting. Careful investigation elicited no other abnormal symptoms except exaggeration of the knee-jerk. On cessation of the malt food and the giving of fresh milk and orange juice, the infant's condition quickly returned to the normal. In this case, also, the specific therapy established, I think conclusively, the scorbutic nature of the child's indisposition; although not one of the classical symptoms of scurvy was present.

These cases illustrate what is meant by the term incipient scurvy. Not one of these infants exhibited the classical, clinical picture of scurvy, so familiar to everyone. Indeed, in two of them, it would have been impossible to have classed them as such, had it not been for the prompt recovery following the application of the supreme test: namely, orange juice or potato and change of diet, i.e., fresh milk.

Although not exactly connected with the type of infantile scurvy now under consideration, it is well to remember that, even when the disease is pronounced in its symptoms, the clinical course may be altogether irregular: a pronounced symptom, or one that is usually, perhaps, a late one, may be an initial one, or for a time, or even throughout the whole course of the affection, the only

symptom. A hematuria or nose bleed, for instance, may be the only manifestation of the disease, and the same may be said of anemia, pallor, fretfulness, cessation of gain, etc.—signs which characterize particularly the incipient type of the disease.

To Alfred F. Hess, the profession is particularly indebted for the recognition of the existence of mild and incipient forms of the disease. He distinguishes two types of mild scurvy: One, which he denominates "Subacute Scurvy," characterized by incompletely developed, yet more or less familiar symptoms; the other, which he calls "Latent Scurvy," distinguished by stationary weight, pallor, anorexia and a general want of well being, quickly disappearing under antiscorbutic treatment.

These mild and undefined types of scurvy, I believe, are not uncommon, although generally unrecognized. They either continue to progress until they present the gross and well-known features of the disease, or else they recover spontaneously—an issue which is probably not impossible.

The incipient variety of infantile scurvy will be more frequently recognized and appropriately treated if the prominent etiological factors concerned in this disorder, are constantly borne in mind. These are the age of the patient and the food he is taking. The susceptible age for scurvy, it is not necessary to tell this audience, is from the sixth to the twentieth month; the disease appearing to have a special preference for infants between the eighth and fifteenth month.

That the boiling or sterilizing of milk may cause the disease in susceptible infants is generally accepted; but can pasteurized milk accomplish this? I think that Hess has conclusively shown that it can and does. In the discussion at the 1916 session of the American Pediatric Society, the trend of opinion was that, in spite of the undoubted benefit secured by the pasteurization of milk, it was capable of producing scurvy. The bi-pasteurization of milk seemed to be the responsible factor in several of my cases; that is, the pasteurization at home of an already commercially pasteurized milk.

Morse, too, in 1916, speaking of the increase of infantile scurvy in Boston during recent years, says that there is evidently some connection between the pasteurization of milk and the spread of the disease.

On the other hand, in the Paris Milk Stations, all the milk is boiled or sterilized, yet the French, no mean observers, do not re-

port scurvy as resulting therefrom. Whatever the truth may be, the fact that pasteurized milk has been used should be given due weight in endeavoring to establish the diagnosis in infants exhibiting symptoms suggestive of scurvy.

To a Pediatric Society, it is scarcely necessary to describe in detail all the food or modes of feeding that may induce scurvy; but high among them, in my experience, stand the malted foods, and, indeed, excess of any carbo-hydrates in the dietary. Peptonized milk, over-diluted (i. e., protein-poor) milk and proprietary foods have, of course, a place in this category. The statement of Hess that the "Exudative Diathesis" of Czerny predisposes to scurvy may be of value in the diagnosis of the incipient form of the disease, as may, also, the "Capillary Resistance" test of the same investigator. I have been able in a recent case, to substantiate the worth of this test. It consists in placing a blood pressure band about the infant's arm until the 90 mark is reached and maintaining the pressure at the level for three minutes. The band is then removed, and, when the blueness of the arm has faded, an examination is made for petechiae.

Other points of assistance in the diagnosis of incipient scurvy are increased knee-jerks, unusual pallor, edema of the lower limbs, slight and irregular fever, indefinite tenderness, duskiness without hemorrhage or sponginess of the gums, or bleeding evidenced only by deep pressure or friction of the gums, anorexia, failure to gain or slow gain in weight and an unexplainable *nervous excitability*, *fretfulness* and *restlessness*. Many of these symptoms are seen in a variety of infantile disorders; but when they cannot be otherwise explained, it will be wise to inquire into the dietary of the infant, and, if it is of a nature capable of producing scurvy, the test of specific therapy should be applied.

No mention has been made in these remarks of the "Cardio-respiratory Syndrome" described by Hess, because I have no knowledge of it. This is a very rapid pulse, and respirations which may run to sixty a minute, with enlargement of the heart to the right, demonstrated both by percussion and the Roentgen ray. Nor have I any experience with the white line shown by the same ray, at the epiphysis of the bones, described by Fraenkel and others as present before classical, clinical signs make their appearance.

In conclusion, it may be said, that the mild and incipient forms of scurvy are probably not uncommon, and are frequently unrecog-

nized. It is, also, quite possible, nay, probable, that some cases recover spontaneously. Notwithstanding this, all infants fed upon foods capable of causing scurvy, among which may be placed pasteurized milk, should receive orange juice at an early period, even from the third month on.

California and Pacific Avenues.

MEDICAL EXAMINATION AND THE AVIATION CORPS

BY WILLIAM B. CHAMBERLIN, M. D.

CLEVELAND

In the present world struggle two implements of warfare have attained unprecedented prominence, the submarine and the aeroplane. Although the armies in the field will still play an important part, yet the ultimate outcome of the war may possibly be decided in the last instance by one or both of these branches of the service. So great an authority as Wilbur Wright asserts that if the United States could put 10,000 aeroplanes into immediate service the war might be brought to an early conclusion. This would be accomplished, not by destroying the enemy's munition plants, his railways or his submarine bases, but by depriving him of his means of observation and information. Such a fleet, if added to that already possessed by the allies, would, so to speak, completely blind the enemy. He would no longer be able to direct his artillery fire to advantage, while his adversary could move vast bodies of troops and hurl them against the weaker portions of the opposing line without such movements becoming known.

At present the government is confronted by two great needs—men and machines. It is with the former that the medical man is directly concerned, for upon him falls the responsibility of deciding whether or not a man is fit for aeroplane service. For this service the government is demanding practically *the perfect man*. First of all he must have had two years of college work, or its equivalent. Then, in addition to the usual physical requirements, he must have perfect hearing and perfect sight, the latter without the correction of glasses. All these, however, may be said to be the least of the requirements, for the applicant must also have a perfect sense of

equilibration. If unable to pass the latter test the remainder counts for nothing; although such a man might easily be eligible to almost any other branch of the service. The recent visit of Major Isaac H. Jones of the Medical Officers' Reserve Corps to Cleveland was for the purpose of establishing an examining unit in this city and interpreting the various tests which the government would accept as standards.

Up to the present the tests for aviators in our own, as in other countries, have been extremely crude and founded on little or no scientific basis. The United States is probably the first great power to call in experts, outside the medical corps of the army, in formulating and standardizing these tests. Her requirements today are more rigid and exacting than those of any other nation.

Man's knowledge of his position in space is gained from three sources: (1) his muscle sense, by which he recognizes, *e. g.*, whether his forearm is extended or flexed and whether his feet are dangling or planted on the ground; (2) his eye-sight, by which he is made conscious of his relation to surrounding objects, and (3) his vestibular apparatus, the utricle, saccule and semicircular canals. This apparatus, though situated in the petrous portion of the temporal bone, in close apposition to the organ of hearing, has possibly less to do with the latter than it has with the organ of seeing. The aviator, seated in his machine, receives little or no help from his muscle sense, while his frequent passage through dense clouds or at night in complete darkness may deprive him of any sense of orientation ordinarily gained through his eyes. He has become, for the moment, the bird, flying through a fog or mist, or the bat which flies at night only. In such cases he must depend entirely upon a proper sense of equilibration, gained through an intact and unimpaired labyrinth. So upon the examiner, the physician, in the last resort may depend the safety of the aviator, of his machine and of the army to which he is to furnish information. The United States is making immediate preparations to place 30,000 men and machines in the field. The machines are being rushed to completion and the men are forthcoming. Aviation is already one of the most popular branches of the service. In Chicago alone forty (40) applicants are being examined daily. The responsibility and burden upon the examiner is therefore great.

The testing of the vestibular apparatus involves an interesting bit of technical knowledge, discovered and elaborated by Robert Barany of Vienna.

The applicant is first placed on a properly constructed revolving chair, with stop pedal attached. With eyes closed and head tilted 30 degrees forward, thus bringing both horizontal semicircular canals into the plane of the turning, he is now revolved ten times to the right in exactly twenty (20) seconds, when the chair is brought to rest by means of the pedal. With vision directed on a distant object, there should now occur a horizontal nystagmus (a quick, jerking movement of the eyeballs to the left and a slow return to the right), during a period of 26 seconds. A variation of eight (8) seconds, more or less, is allowable. This constitutes the normal. A variation of more or less than eight (8) seconds is absolute ground for rejection. The test is now repeated with turning in the opposite direction, toward the left. When the turning has ceased this will give a quick movement of the eyes to the right and a slow return to the left.

Pointing and Past-Pointing. If the normal individual, with eyes closed, extends his arm and forearm straight before him and touches the examiner's finger, he will be able to bring the arm to the perpendicular and again touch the finger of the examiner, without deviation to right or left. The test is made for both right and left arm. The applicant is now turned ten (10) times to the right. When the turning has ceased he is directed to touch the examiner's finger and touch it again, after bringing the arm to the vertical. He will now point several inches to the right. This is called *past-pointing*. The normal subject will past-point three (3) times to the right, when he will again point correctly. The test is made with both arms. It is then repeated, after turning to the left. If the applicant past-points more or less than three (3) times he is rejected.

Falling. With head inclined 90 degrees forward, thus bringing the vertical semicircular canals into the plane of turning, the candidate is turned to the right, five (5) turns in ten (10) seconds. On raising his head or his body to the vertical it inclines to the right. Similarly on turning to the left it inclines to the left. This tests the vertical semicircular canals. Inability to satisfy these tests is also cause for rejection. By means of the above tests it will easily be able to distinguish the *absolutely* normal from the *absolutely* abnormal. There will remain, however, a third class of questionable

or border line cases. In such cases further tests may be made. If the right ear is injected with cold water (68° F.), there should occur a rotatory nystagmus with quick component to the left and *vice versa*. While the turning test stimulates both labyrinths simultaneously, the latter, or caloric test, enables us to differentiate and decide exactly which labyrinth is failing to perform its function.

Further information in regard to the sense of equilibration is given by the static and dynamic tests. The former is the familiar Romberg test, while the latter consists in having the candidate walk twenty (20) feet forward with eyes closed, then backward to the point of starting. Refinements of the above tests would be standing on one foot while the other is allowed to rest on the knee or instep, hopping forward twenty (20) feet and back to point of starting, etc. Special stress is laid upon free nasal passages and diseased tonsils. Operation is demanded when abnormalities exist and if refused constitute cause for rejection. The eye examination is equally severe.

Aviation, in addition to the usual physical demands, makes special demands upon at least three (3) of the special senses. For the examination of these the services of the trained rhinologist, otologist and ophthalmologist are required. The medical department of the army is fortunate in having a trained specialist in these lines in the person of Colonel Lister, to whom General Gorgas has detailed the responsibility for the examination of the aviation corps. Through Major Jones, Colonel Lister is establishing in the various important cities examining units, consisting of men of recognized ability in their special lines. In all instances of acceptance or rejection their word is final. Like the Bureau of National Defense, this is another instance of the wisdom of the government in calling to her aid help from without the regular medical corps in her emergency. It is an opportunity to render service at home, as well as in the field.

614 Osborn Bldg.

HEADACHE OF OCULAR ORIGIN*

BY WILLIAM EVANS BRUNER, A. M., M. D.

CLEVELAND

The manifestations of eye strain are numerous and varied. The most frequent is headache, or the combination of eye and headache. While I do not as an oculist wish to lay too much stress upon the eyes, nor appear to ignore or belittle the importance of other sources of headache, yet I believe it is true that one of the most common of all causes of recurring headache is eye strain. The most frequent location of eye headache is the brow, frontal or temporal region, but the occiput is a not infrequent location and indeed they may be situated in any part of the head.

We usually think of a headache which a patient has upon awakening in the morning as probably not being of eye origin, certainly it is true that headaches from eye strain are more apt to come on after the patient has been up for a time, or toward the latter part of the day or after some use of the eyes for close work or a trip down town. But a morning headache is not uncommon after an evening at the theatre or moving picture show or after some use of the eyes for close work the preceding evening.

Ocular headaches may be due to an error of refraction, or failure in the power of accommodation, as in presbyopia, or the lack of muscular balance, or simply weakness of the extra-ocular muscles. Inequality between the two eyes is a very common cause. In reference to the relative frequency of the various types of refractive error as a cause of headaches, myopia is least apt to produce them, while astigmatism, hyperopia, or hyperopic astigmatism is a more frequent cause. One very important point to bear constantly in mind is that it is often the slight error of refraction which produces headache and other reflex disturbances, while the high errors which greatly impair vision may cause little or no discomfort. Therefore, to test a patient's vision and conclude because he reads the normal or standard line, that the eyes themselves are normal and are not the cause of the patient's headache, is often a grievous error. And likewise the mere fact that he has normal vision with the glasses which he may already be wearing is not proof in itself that the

*Read as part of a Symposium on Headache, at Cleveland Academy of Medicine, May 18, 1917.

glasses are correct. In many instances, I have obtained complete relief in patients in whom the ocular defect was so slight in amount, or the change in glasses so small, that I frankly told them that I considered it very doubtful whether the eyes would account at all for their discomfort. In some of these patients our doubts have been verified, the glasses have afforded no relief, but in so many instances has the correction of these slight defects afforded marked or complete relief, that in doubtful or suspicious cases glasses are at least worth a trial. Small degrees of astigmatism at unsymmetrical axes in the two eyes or at certain particular axes are especially apt to produce headaches entirely out of proportion to their amount. Relief in many of these cases will come only when the patient wears the glasses constantly and that, too, even though the glasses make no improvement whatever in vision—let us get away from the idea that glasses are needed only when they improve vision.

It is scarcely necessary before a body of physicians to emphasize the importance of testing the refraction under a mydriatic. Too often the laity will go for glasses to an optician, whose office or store is now decorated with various diplomas and State certificates, which serve the more readily to confuse the ignorant or innocent public, and because these glasses do not afford relief they conclude that the headaches are not due to the eyes.

Accurate refraction work cannot, in my opinion, be done in patients under forty-five, except in occasional instances, without complete cycloplegia, and frequently this procedure is necessary even beyond that age. Personally I do not believe in the use of homatropine for children, but think that the more thorough and prolonged action of atropine is much preferable and more accurate.

Beginning presbyopia, or failure of accommodation because of age, is a very frequent cause of headaches, and such patients often have much trouble in getting accustomed to glasses or to the addition to their distant correction.

Weakness of the muscles or lack of muscle balance is also a frequent and very troublesome source of discomfort in patients whose eyes are otherwise normal or whose glasses perfectly correct their error of refraction. Such imbalance may call for prisms, for gymnastic exercises, and in rare, very rare instances, for operation upon the muscles.

The type of headache due to eye strain varies greatly. Not a few of the so-called bilious headaches are of eye origin. Some

neurologists and even some oculists have claimed that true migraine is not produced by eye strain. I confess that I always feel more uncertain about obtaining relief by treatment of the eyes from attacks of migraine than from other types of headache, but I am equally certain that I have in not a few instances seen marked improvement both in the frequency and severity of the attacks and even complete cessation of them follow treatment of the eyes.

Eyes are at times kept in an irritable and sensitive condition by reflex disturbance from some other cause, such as an apical abscess or impacted tooth or an abnormality in the nose, or sinusitis; some intracranial condition, some pelvic abnormality, or a chronic toxemia of gastro-intestinal origin, so that the patient will suffer from headaches following the use of the eyes, but glasses, even though needed, will afford no relief or only partial relief until this other condition is corrected. We also do unfortunately encounter patients occasionally who will suffer headaches from any over-use of the eyes despite everything that can be done for their eyes. They possess hypersensitive eyes or their weak eyes are simply a part and a symptom of a very sensitive general nervous system. The general practitioner must remember that the oculist cannot put strong eyes in a weak body, and the oculist must not forget that he needs the co-operation and help of the general practitioner. Again and again have I seen patients who gave a history of ocular headaches beginning after a serious illness or operation. The refraction had not been changed by the illness or operation, but their power of endurance or their ability to overcome a slight defect had been lessened and temporarily at least they may need help, or in other instances they should be forbidden the use of the eyes until they have more fully regained their general strength. Over-use of normal eyes or of eyes properly corrected with glasses may cause ocular headaches, and especially is this true if the use is under unfavorable conditions, as poor light or artificial illumination. Some persons can endure much more physical or nervous strain than others; the same is true of eyes. Then, too, most individuals at fifty or beyond cannot endure as much as they could at twenty-five or thirty, and this applies to their eyes as well as the rest of their body. Some eyes are not adapted to hard usage or will not stand the amount of use which another pair can endure with perfect ease. Eyes with pathologic defects, as corneal scars, or opacities in the lens, may

continue to cause headaches despite everything we can do for them, and the same is true of eyes with irritable or inflamed retina or choroid or optic nerve.

Given a pair of irritable eyes, it is not sufficient merely to give that person glasses, or take care of their muscles; treatment of the eyes locally and by internal medication may be necessary before that person will obtain ocular relief. We cannot judge of the value of glasses in many instances by the immediate effect. While one person may adjust themselves to glasses or a change of lenses almost immediately, in another person it may be weeks or even several months before the full benefit is obtained.

Lastly, we must not forget that the treatment of headaches is not infrequently a process of elimination as to the etiology. In the same person may exist several conditions, any one of which might produce headaches, and one by one these defects must sometimes be remedied before we arrive at the real cause, or in other patients it is a combination of several causes that produces the discomfort, and relief will not be attained until all the pathologic conditions have been rectified. Whatever our special line of work or interest, we must not forget that first of all we are or should be general physicians.

REMOVAL OF A WATERMELON SEED FROM THE TRACHEA OF AN EIGHTEEN (18) MONTHS OLD CHILD

An illustration of the difficulties and the importance of early diagnosis in questionable cases of foreign bodies in the respiratory tract.

BY WILLIAM B. CHAMBERLIN, M. D.

CLEVELAND

Ruth H., aged eighteen (18) months, was referred to me on June 21st, 1917, by Dr. Ernest H. Brooks. The history was as follows: While creeping on the floor the child had a coughing spell, not especially violent. There was no marked dyspnoea and no cyanosis. The mother was upstairs and the aunt, who happened to be near the child, stuck her finger in the child's mouth, thinking that the cough might be due to a foreign body, possibly a watermelon seed, as the family had had watermelon the previous evening for dinner. No foreign body was discovered. Subsequent to this there were periodic attacks of a mild dyspnoea. Dr. Brooks was first summoned some four days later and made a diagnosis of probable croup. The usual treatment for such cases was resorted to. The subsequent course was as follows: During the day there would occur occasional croupy attacks, but never severe. There was almost no cough. The child was put to bed at the usual time in the evening, and would sleep soundly until 11 P. M. After this it would become restless and the sleep would be interrupted by typical croupy attacks and occasional mild paroxysms of coughing. The temperature was at all times normal, as were also the general physical signs. The condition was uninfluenced by treatment of any kind.

Examination showed a well nourished, happy youngster. The temperature was normal and the chest signs negative. There was no stertorous breathing and no roughened respiration. No X-ray examination was made. A diagnosis of possible foreign body was made and bronchoscopic examination advised.

At Lakeside Hospital, under light ether anesthesia, the small-sized Killian bronchoscope was introduced and the larynx brought quickly into view. A swab of 4 per cent cocaine was applied to the cords, after which the tube was passed between them into the upper

portion of the trachea. Very little mucus was encountered. Immediately on passing the cords a white object, indefinite in size and contour, was discovered. This object disappeared completely on each inspiration, apparently beneath the overhanging right cord. On expiration it came into view, only to disappear again with a fresh inspiration. The forceps were now introduced and an endeavor made to remove the object. Traction, however, tore it from the grasp of the forceps. It was readily located again in practically the same position, grasped with the forceps and withdrawn with considerable difficulty. Examination showed the foreign body to be a large-sized watermelon seed, considerably swollen from the moisture of the trachea and intact. At present, after being thoroughly dried, it measures 7 x 13 m.m. in its greatest diameter by 2 m.m. in thickness.

The child left the operating room in excellent condition and was discharged from the hospital on the following day. Subsequent to the operation she remained in a croup tent over night, according to custom. Inquiry of the mother by phone some days later disclosed that she still exhibited slight hoarseness, but was otherwise in the best of health and spirits.

Success in foreign body work, whether in the alimentary or respiratory tract, varies with the time. The earlier the attempted removal, the easier can it be accomplished technically and the more favorable is the prognosis. The above case gives a striking illustration of the frequent absence of physical signs and the importance of a definite or fairly definite history as a deciding point as to whether or not bronchoscopy shall be performed.

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EDITORIAL

POLIOMYELITIS

Popular interest is very keen on the subject of anterior poliomyelitis at the present time, and there are probably no physicians who have escaped countless inquiries by anxious mothers about the method of injection and the means of prevention. Much has been

written in the last few months on the general subject, much more than any one could attempt to cover unless ample time were at his disposal. An authoritative opinion by observers of known ability based upon actual investigation is distinctly welcome. The report of the "Committee appointed by the Mayor of the City of New York to co-operate with the Department of Health, for the Special investigation of Poliomyelitis," fulfills these requirements, and on account of its wide appeal, we think the summary of its findings are well worth reprinting here:

"The investigation carried out by the field force of your committee, under my direction, has supplied information of two kinds:

"First, information of practical daily import was obtained by the physicians and nurses who visited premises harboring poliomyelitis patients and the relatives and friends of the affected families, which was turned over immediately to the Department of Health for its use and guidance.

"Second, the data thus collected and recorded were subsequently collated and analyzed in the hope that light might be thrown on the important questions of source of infection, period of incubation, types of disease, significance of food, of diseases among domestic animals, insects, and some other subsidiary topics.

"This second line of inquiry yielded information which led us to regard the disease as one (a) communicated by personal contact, (b) in which the slight and non-paralytic (abortive) cases are the most frequent sources of the infection, and (c) in which the incubation period varies between three and ten days. We were not able to make a conclusive study of the question of the healthy carrier, but the review of the data leaves us with the impression that he plays a less conspicuous part in disseminating the infection than does the mild and often unrecognized case of the disease.

"We gave especial attention to the working out of the incubation period on the basis of the data collected. Recognizing the difficulties and fallacies of the undertaking in a large, miscellaneous population, such as exists in Greater New York, we cannot assert

that our conclusion is absolute. We think it probable, however, that taken together with the conclusions of previous investigators, it is virtually correct.

"We could, finally, find no substantial evidence to support the notion of food, lower animal or insect carriage of the infection or carriage by clothing and other extraneous objects, although in regard to those subjects our investigations were incidental rather than essential."

AN HEROIC PHYSICIAN

We physicians take great pride in certain members of our profession whose epoch-making investigations have illuminated the obscure, and whose discoveries directly or indirectly have added to the list of remedial diseases. Their fame is just; indeed, we feel that popular acclaim for the medical scientist is parsimonious compared to that freely accorded statesmen and military leaders, whose actual contributions to human happiness are, as we think, vastly less in scope and duration. Perhaps we ourselves are responsible for this lack of general recognition, for we hardly seem to herald our brave men as we should. We ourselves do not seem to grasp the full significance of the sacrifice some have made, and are making today, for the sake of humanity.

It is for this reason that we have reprinted in the editorial section two obituaries of Dr. Walter James Dodd.

The history of Dr. Dodd's devoted labors is representative of the men who were pioneers in his field. He is one example of many who have laid down lives as a result of their enthusiastic pursuit of knowledge. His simple biography, however, as written by Dr. Porter and Dr. Lee and published in *The Boston Medical and Surgical Journal*, is particularly appealing on account of his brave acceptance of pain and disability, the continuance of remarkably useful services in spite of fearful odds, and the lovable and sunny nature which is portrayed for us. One cannot read these accounts without a thrill of pride mingled with a sense of personal loss:

Dr. Walter James Dodd. By C. A. Porter, M.D., *Boston M. & S. J.*: CLXXVI: 763.

In 1892 there came to the Massachusetts General Hospital a young man, Walter Dodd by name, to fill the position of assistant apothecary. Born in London, he came here at the age of nine to live with relatives in Somerville. A few years of schooling, a few more years with the Oriental Tea Company, and then a desire to go to sea possessed him. But after a talk with ex-President Eliot, who was attracted by his modesty and quality, he decided to study chemistry at Harvard under Professors Jackson and Hill.

Last December, a little before Christmas, Dr. Walter Dodd died in his own house on Marlborough street, more respected and more beloved than any other member of the staff.

During his first years at the hospital he was interested in photography and all the house officers and others are indebted to him for pleasant reminiscences of the old place and old times. His knowledge of chemistry and drugs, combined with his invariable good nature, made him an invaluable consultant. For example, I remember a particular clever neurotic morphine addict who had been treated before and knew valerian when she smelled it. After several attempts Mr. Dodd invented a combination which completely deceived her and to this day is lost to medical art.

In 1896, the year of Roentgen's discovery, he had been appointed apothecary and photographer to the hospital. With his friend, Dr. Codman, he began work in March with a large static machine borrowed from the Neurological Department. In October he acquired a powerful 12-inch induction coil. After his regular duties were finished he literally burnt the midnight ray working enthusiastically all his spare time, utterly ignorant of any danger, until in November the rays burnt him. Immediately after his recovery he was again at work until in April, 1897, a severe general dermatitis with excruciating pain forced him to lay off. In July, at his suggestion, the first graft was applied to a chronic ulcer on the left forefinger. The operation was successful and was followed by immediate relief from pain. Within a month Mr. Joseph Godsoe, then assistant apothecary, recalls him, both hands in splints, working all night in the old Kingsley Studio in a temperature of 110°, with a cake of ice in the developing fluid to keep the films from leaving the glass. When morning came both men were in the apothecary shop as usual, performing their routine work and awaiting evening to return to the X-rays.

Many operations followed, in spite of which Dr. Dodd kept continuously at work. In December, 1901, the whole surgical staff joined in giving him an engraved gold watch and chain as a slight acknowledgment of his devoted sacrifices. His rare pleasure on receiving this unexpected token was good to see and to remember. In 1902 malignant disease first appeared, requiring amputation of two fingers, followed by a dozen more operations in the next three years. As an illustration of the grave humor of the man I shall always remember him one morning in May, 1905, coming down the hospital corridor with his characteristic gait, and an unusually happy smile on his face. He asked me whether I noticed anything queer about him. I said: "No." "Don't you see that I have had both hands in my trousers pockets and not a dressing on either?" It was the first time in eight years that he had been able to do this.

In 1908 he received his decree from the Vermont Medical College, immediately followed by his appointment as Roentgenologist to the hospital, and in 1909, instructor at the Harvard Medical School. In the meantime the

work of his department was increasing almost beyond bounds. To bone and foreign-body work was added the therapeutic use of the X-ray. Then came bismuth and collargol injections with all that these have meant in diagnosis to medicine and surgery. In spite of loyal assistants working overtime, the X-ray department had hard work to keep up with the routine demands. If anybody wished to see a plate, give a lecture, or show lantern slides. Dr. Dodd was always ready with the material, and in spite of his mutilations, frequently arranged things with his own hands. These increasing deformities, combined with a naturally shy disposition and unwillingness to ask help from others, made him avoid society and any amusement outside of the hospital. Finally a friend insisted upon taking him out to dine, and himself wore gloves. This broke the ice and from now on his really social nature had opportunity to expand. His love for singing and natural talents as an actor made him unusually popular with the house-officers and at all of the gatherings of the Massachusetts General Hospital Alumni. He was noted for his stories at all times and places which were full of kindly wit, playing, like heat lightning, about the vagaries of human nature.

In 1909, after consultation with friends, he determined to open a private X-ray plant at 259 Beacon street with Dr. Ariel George. In 1910 he married Margaret Lea, and for the first time was thoroughly happy. His practice increased, he spent the summers at Point Allerton where it was his pleasure, after long years of institution work, to entertain his friends. His devotion to young Burnham Porter grew with years, and many happy days did the boy have helping Dodd work in his garden and wondering at what he accomplished with his grey-gloved hands.

When war was declared Dr. Dodd, an Englishman, was eager to help. The first Harvard Unit, for which he was to act as Roentgenologist, was to sail in June, 1915. A severe operation on the hand with an axillary dissection, would have deterred most men from any idea of this trip, but Dr. Dodd, accompanied by his wife, with wounds unhealed, arrived in an ambulance at the train and planned to convalesce from the operation on the ocean and while on service in France. The character of his work and his qualities while on duty, Dr. Roger Lee will describe.

Upon his return in October, 1915, his general condition was better than it had ever been. He had served a cause that he loved, had made himself popular with patients and doctors alike, and in a characteristic way had picked up more knowledge and more anecdotes than any other member of the unit. During the beginning of 1916 he was very well and making plans to purchase a house, and by further division of labor to enlarge his usefulness and commence some writing. In the summer a sudden infection with chills developed and the epitrochlear and axillary glands quickly enlarged. He lost weight and had continuous fever. In spite of this he purchased his house. In August a gland at the elbow was removed and found infected both with pus and cancer. A very thorough dissection of the axilla followed, from which, for the first time he showed little tendency to react. There developed a persistent and racking cough which could not be explained, though all, including himself, feared metastases. In November it became clear that both lungs were involved. During the last days of his illness he was always thinking of others, would brighten up to see a friend or tell a story, but for the most part was dreaming in a mild delirium of past incidents in his life and the happy days in France. There was ever a meaning in these wanderings, though often his wife and friends did not understand. With a whimsical smile he would frequently correct some misuse of words or flighty ideas. On December 16th he died, having, in his short life, accomplished all that makes life worth living. Through pain and suffering he had forgotten himself and thought only of his work. He has become an authority, his unbiased conservative opinions carried conviction. In the medical societies he rarely spoke, but when he did, all listened. He had been loyal to the hospital;

his wife looked after him with devoted care; he had hosts of friends. In his own calm, serene way he had shown us that pain and operations were mere incidents. He has taught us how to live and how to die.

Before a recent operation he wrote a will giving \$100 to start an endowment fund for the X-ray department. These were his words: "With the hope that others who can afford more will give according to their means."

Walter Dodd in France in 1915. By Roger I. Lee, M. D., *Boston M. & S. J.*: CLXXVI: 765.

One morning in the spring of 1915, Walter Dodd hunted me up at the hospital and said he wanted to have an important talk with me. He had just heard about the Harvard Unit and was fired with enthusiasm to go with the unit and to be of service to the afflicted in Europe. He felt he might have to be looked after a little and hoped in case of need Dr. Porter and I would consent to do what he termed "that great favor." But the real problem to him and concerning which he wanted advice was whether in my opinion his presence might inconvenience the unit on account of the possible extension of the disease while he was abroad. Very calmly and quietly he talked of the inevitable outcome. He had accepted that. To his mind the sole consideration was that the occurrence of the inevitable outcome should not in any way handicap the work of the unit. I attempted to put forth my own point of view, that if ever a man was entitled to the comforts of home he was that man. Since it was quite uncertain where the Harvard Unit would be or under what conditions it would live, it was unnecessary for Walter Dodd to exchange the well deserved comforts of his home for the possible hardships and possible overwork in behalf of any cause, no matter how good. However, Walter abruptly ended that particular argument by saying that the considerations that I had brought forth neither interested nor influenced him.

When it was finally decided that Walter would be a member of the unit he was operated on again. He left his house in Allerton in an ambulance to take the boat train for New York. No one, I think, could fail to be impressed by this picture. Both his hands were bandaged, one was greatly swollen. He had put on his "Store Clothes," as he always called them, for the first time after operation to begin the journey. It seemed indeed remarkable that this man was on his way to the war zone to help others. On the boat many of the doctors and nurses of the Harvard Unit first learned to know this cheerful, genial, lovable, kindly soul. Always quiet, and retiring, nevertheless he was the center and ringleader of the fun and merriment on the ship.

In England most of the unit were much disturbed because it was not known even then just where the unit was going. While we were bothering about petty details of our equipment the one man whose entire work depended upon his equipment refused to attempt to anticipate possible difficulties of details of equipment. He made a careful survey of the general nature of the work and of the general problems involved.

London was as ever a source of joy to Walter. He was born there. He derived much amusement from recalling incidents in his youth, particularly his escapades as a boy of eight in his attempts to be an actor. The London Cockney was a never-ending source of pleasure. His whimsical mind fashioned many a good story out of bits of conversation, and his good imitative powers and histrionic ability added greatly to the telling of these stories. Often late at night during the inactivity of the unit in London he became reminiscent, but always reminiscent of things that were pleasant. He spoke of his work but never of his operations. He spoke many times of his great good fortunes. He considered himself most happy in all of his

associations, in his associations with the hospital, the University, with his friends and his wife. He liked to recall that he had been associated with Harvard University and Harvard men almost continuously for thirty years. His University associations dated back to the chemical laboratory where he became a laboratory boy at the suggestion of President Eliot. Doubtless Mr. Eliot has long since forgotten the boy he dissuaded from going to sea, but Walter cherished the recollection of two very pleasant interviews with Mr. Eliot. He recalled with gratitude how much the Massachusetts General Hospital and the men at the hospital had done for him, but never mentioned what he had done for the Massachusetts General Hospital or the Massachusetts General Hospital men. He felt himself particularly fortunate in being able to go with the Harvard Unit. Curiously enough in that unit were two of the men who assisted Dr. Porter at the first of the series of wonderful operations that preserved Walter Dodd for so many years.

When we finally moved to France and got under canvas, Walter had one very fixed idea—no concessions were to be made for him and his infirmities. Gladly would everyone, from the commanding officer to the lowliest orderly, have done everything in his power to increase his comfort, but Walter would have none of it. Even when he had a recurrence of his old painful sacro-iliac trouble, the substitution of a hospital bed for his canvas cot had to be surreptitiously arranged. Even then some of us were in great disfavor for the brief time that this kindly soul could harbor resentment towards anyone. Very characteristically he had loaned the sacro-iliac corset without which he was not supposed to travel, to a rich patient who was similarly afflicted, and so won his sympathy, but who had forgotten to return it.

In the work of a base hospital one has the feeling that it is largely a question of well trained hands and well trained minds. With such a mass of material the individual, surgeon or physician, is more or less lost. Some men have better training, others are perhaps more skillful, but it is given to few to contribute anything that others could not contribute if not equally well or at least nearly as well.

Parenthetically an obvious exception may well be made of our American dentists, particularly Dr. Hopkins and Dr. Kazanjian of our unit. But extremely striking was the contribution of Walter Dodd in his particular field. Handicapped by his own infirmities, by inadequate and inferior equipment, by insufficient and untrained assistance he was at once the invaluable man of the unit, at once the man that gave something to the surgeons and, of course, to the patients, that no one else could contribute. Walter had long since spoiled the men at the Massachusetts General Hospital because they relied implicitly on his opinion for their guidance. In France, in a remarkably brief period, all the men came to place absolute reliance, not so much on his actual findings, but upon his same interpretation of those findings. Not infrequently decision of operation was left solely to his judgment. It required only a short experience to convince all the men that Walter Dodd's opinions were consistently sound and accurate.

For equipment he had a very ordinary field X-ray outfit. He had one unskilled helper and one partially trained man. He left them both expert technicians. He rejoiced at this meagre equipment because it recalled to him the struggles of the early days and he wanted to emphasize the fact that good work is possible in his specialty under all sorts of conditions. Of course, he horrified his technicians by tearing his machine to pieces and then reconstructing it after his own fashion. In the next hospital the X-ray equipment was modern, elaborate and complete. At first they were inclined to be patronizing concerning our little X-ray plant. It was not long, however, before Walter was called in consultation to help them out of very serious difficulties. After the first few weeks any X-ray difficulties in the surrounding hospitals meant an emergency call for Walter Dodd. The X-ray work

at our hospital served as a standard. Never was a more striking illustration of the fact that it is the human equipment rather than the mechanical equipment that counts. An interesting instance of his wide experience and of his vast fund of available knowledge comes to mind. Two of us visiting a nearby hospital were shown an unusual case of a bony tumor with X-ray photographs. The date for amputation of the limb was set. We asked the privilege of showing these X-ray photographs to Walter Dodd. He immediately recognized the condition as a rare form of tumor in which amputation was not indicated but in which local eradication of the tumor with preservation of the limb would be entirely successful. It would be futile to multiply the examples of his skill, not only in making the Roentgenological findings but more particularly in his sane interpretation of the findings. More than any other individual and more than all the other individuals of our unit he determined the high standard of the excellent work done.

Those of us who were with this particular Harvard Unit perhaps think of Walter Dodd in terms of his personal qualities rather than in terms of his professional qualities. Great as his professional attributes were they seem pale in comparison with his personal attributes. Everyone came under the spell of that wonderful personality. Apparently he had a wide visual field for all goodness and beauty but congenitally he had a blind spot for the dark, disagreeable and unpleasant qualities of men and things. Through habit of mind this blind spot seemed to have enlarged still further. His birth and his judgment made him a strong pro-ally; nevertheless he was not blind to the good side of Germany and the Germans.

Perhaps Walter Dodd will be most pleasantly remembered in connection with our leisure hours. Whether on an excursion, at the various gatherings, at the dinner table, or in his tent he was almost foremost in honest fun and wholesome cheerfulness. Nature endowed him with an agreeable singing voice which one likes to think was made richer and sweeter by his own character. He was always active in getting the men together for an informal session of songs. We forgot his infirmities as he would have us forget them. Our recollections are not at all the recollections of a tragic figure who had experienced with a glorious fortitude years of suffering for the benefit of science and humanity, or who had endured with complacent calmness many mutilating operations. Our recollections are and will be those of a happy, cheerful, humorous soul who looked upon the world and its products with a kindly eye and generous, who saw good in everything and everybody. In his presence everything and everybody was good. We recall one who was full of the joy of living and who loved life.

ABSTRACTS

ABSTRACTS IN MEDICINE

The Influence of Non-specific Substances on Injections. James W. Jobling, *Arch. Int. Med.*, 1917: XIX: 1042.

Most of the work which has been done in a search for curative agents for the various injections evidently has been based on the assumption that a substance must be found which will act directly on the infecting organism, or that will cause a mobilization of those specific immune substances which we regard as the means nature uses to effect recovery. Jobling says that he finds considerable evidence, however, both in the laboratory and the clinic, which indicate that nonspecific factors have a large share in bringing about recovery from disease. He recounts his own work and that of others with the intravenous use of the secondary proteoses. He states that the results are quite evident. In certain instances which are detailed they are striking. The reaction is usually severe, the injections being followed in one-half hour to one hour by a chill lasting from fifteen to forty-five minutes, and an increase in temperature of from one to four degrees F.

Immediately after the injections in acute infections, such as typhoid fever, there may be a permanent return to normal temperature—termination by crisis; the temperature and general conditions may improve more slowly—termination by lysis; or the symptoms may return and the disease progress as usual, uninfluenced in any manner. Various factors are advanced tentatively to account for the beneficial action—a disturbance of the hematopoietic system which alters antibody formation; hyperpyrexia; leucocytosis; mobilization of ferments; increase in the antiferments; and physical changes in the serum. Jobling concludes that newer methods of immunization open up new possibilities for attacking infections of unknown etiology as well as those caused by organisms for which we have no specific antiserums; and that the fact that all cases are not benefited does not necessarily reflect on the value of the treatment, since there are few therapeutic measures which do not have the same objection. C. L. C.

The Treatment of Syphilis of the Central Nervous System. A Comparison of Mercurialized Serum and Salvarsanized Serum. David A. Haller, *Arch. Int. Med.*, 1917: XIX: 997.

The author, with I. C. Walker, has previously reported the results of the treatment of groups of patients with syphilis of the central nervous system, to determine the efficacy of salvarsanized serum given intraspinaly. In the research, he has compared the results obtained with salvarsanized serum and those obtained with mercurialized serum, both given intraspinaly. Full case histories are given. His conclusions are that the irritating effect in the spinal canal of serum to which mercuric chlorid has been added in the dose of 0.001 gm. is greater than that of 20 c.c. of salvarsanized serum separated from blood drawn thirty minutes after a dose of 0.6 gm. of salvarsan. The average effect on the laboratory findings in the spinal fluid from one dose of mercurialized serum is greater than from one dose of salvarsanized serum. Unpleasant symptoms are more common following intraspinal mercurialized serum than following salvarsanized serum. The greater irritation of the meninges from mercurialized serum prevents as rapid repetition of dosage as is possible with salvarsanized serum. Cases of general paresis, meningitis and cerebrospinal syphilis stand intraspinal treatment with mercurialized serum better than do cases

of tabes dorsalis. It is particularly in cases of active syphilis of the meninges that the mercurialized serum is useful. Mercurialized serum has an advantage over salvarsanized serum in ease of preparation and in its keeping qualities. For these reasons it can be used under clinical conditions in which the use of salvarsanized serum is impossible, or is at least very much more difficult.

C. L. C.

The Importance of Duodenal Alimentation in Severe Dyspepsia Occurring After Gastroenterostomy. Max Einhorn, *Med. Rec.*, 1917: XCI: 1023.

Postoperative complications following gastroenterostomy, including peptic ulcers in the stomach or jejunum in the vicinity of the new opening, adhesions which may cause pain, vomiting, and hemorrhages are successfully treated by intraduodenal or rather intrajejunal feeding if the usual methods fail, *i. e.*, liquid diet, bismuth and gastric lavage. Examination with the duodenal bucket gives information of great value. The string attached to the bucket shows; (1) whether there is a patent opening leading into the duodenum or jejunum; (2) presence of ulceration at the stoma; (3) whether the bucket has passed through the new opening or the pylorus. A blood stain on the string below eighteen or nineteen inches speaks for ulceration near the stoma. A yellow coloration twenty-three inches or further down indicates that the bucket has passed through the new opening, for the distance to the surgical opening is much less than to the pylorus. A discoloration on the string at sixteen or seventeen inches indicates that there has been regurgitation of bile into the stomach, and we have no information regarding the patent openings. Radiograph examinations are necessary to clear up the points. Duodenal or jejunal alimentation gives complete rest to the stomach and pylorus or the new opening. A number of cases of postoperative dyspepsia have been treated, ten of which are tabulated in detail. Eight of the patients treated by duodenal alimentation made a complete recovery, not requiring any further surgical aid. Two cases had a return of symptoms on removal of the tube. Diagnosis of perigastritis with adhesions were made and verified at operation.

H. S. F.

Auricular Fibrillation: Some Clinical Considerations. Samuel A. Levine, *Am. J. Med. Sci.*, 1917: CLIV: 43.

One hundred and twenty-eight cases of auricular fibrillation observed at the Peter Bent Brigham Hospital are summarized—all diagnoses were verified by electrocardiographic studies. The fact that such a large number of cases were seen in two and one-half years in a service of 80 beds illustrates the frequency of the affection. The cases were evenly divided between the sexes; the average age of all the cases was 47.3 years—ranging from seventeen to seventy-five years. In this series the Wassermann reaction was positive in 8.6 per cent—not in excess of the percentage found in all ward patients. Syphilis was not regarded as a frequent etiologic factor. Transient fibrillation was observed in 18 cases, 1 occurred during the lysis of pneumonia, 1 in hyperthyroidism, 1 postoperative, 2 during acute rheumatic fever, 4 following auricular flutter, 4 as a result of active digitalis therapy, and 6 were spontaneous or idiopathic cases—of these 3 had chronic myocarditis, 1 had cancer of the oesophagus, 1 had chronic alcoholism, and 1 endocarditis of the aortic and mitral valves. Persistent auricular fibrillation was observed in 110 cases—these were divided into three groups: (1) with a definite history of rheumatic fever or chorea and had signs of chronic organic mitral disease—35.5%; (2) with no history of rheumatic fever or chorea and who were diagnosed as having no organic mitral dis-

ease—31.2%; (3) the remaining cases—33.3%. The average age of group (1) was males, 35; females, 38.4. The average age of group (2) was males, 57.5; females, 58.9. It is interesting to note that there were only two cases in group (1) over fifty years of age. The cases in group (2) were practically all cases of chronic myocarditis with or without chronic nephritis and hypertension. The third group contained the doubtful cases—which might have been classified under either of the other headings had the histories been more definite. The Karrel diet was given to the oedematous patients. Removal of 400 c.c. to 800 c.c. of blood was frequently resorted to. About one gram of powdered digitalis leaves was given to the patients during the first two or three days. Digitalis was continued in 0.1 gram doses three times a day until therapeutic or toxic effects were produced. Strophanthin (0.0003 to 0.0005 gram) was given intravenously in the urgent cases. Theocin frequently aided in overcoming the oedema; 261 autopsies were reviewed regarding the occurrence of mitral disease—of these 107 were over fifty and only 2 had definite chronic mitral endocarditis; 154 were under fifty years of age—of whom 21 had definite chronic organic mitral endocarditis. Most patients with organic mitral disease develop mitral stenosis and only a small number reach the age of fifty years. H. S. F.

A New Interpretation of the Pathologic Histology of Hodgkin's Disease. Douglas Symmers, *Arch. Int. Med.*, 1917: XIX: 990.

The author thinks that Hodgkin's disease is primarily neither an infective nor a neoplastic lesion of the lymph nodes, but a systemic disease which expresses a predilection for lymphoid tissues, gives rise to multiple foci of growth at approximately the same time and in response to the same provocative agent, whatever its nature and origin may be, causes preliminary hyperplastic changes in the lymphoid tissues and initiates disturbances in the bone marrow, characterized, among other things, by proliferating of the nongranular mononuclear cells of the lymphocytic type, eosinophils and eosinophilic myelocyte. These cells together with the myeloplaxes, are thrown into the circulation and filtered out by the lymph nodes or deposited in them in response to chemotactic attractions, the fibrotic changes of the recipient tissue representing a purely local reactive process. The histological changes beyond the lymphoid system proper, namely, in the liver, kidneys, etc., represent a reaction on the part of normally existing lymphomatous foci to the same toxic substance which is responsible for the disturbances in the bone marrow and for the myeloid transformation of the lymph nodes. R. W. S.

ABSTRACTS IN SURGERY

The Use of Free Grafts of Whole Thickness Skin for the Relief of Contractures. J. S. Davis, *Surg., Gynec. & Obst.*, 1917: XXV: I.

Contractures following burns, injuries, and infection, in which the skin and often the subcutaneous tissues have been completely destroyed have always been surgical "bug-bears." The use of pedunculated flaps from adjacent tissue is often impossible of accomplishment. Flaps from distant parts frequently require the use of constrained positions which become exceedingly irksome. Reverdin and Thiersch grafts are not as a rule effective in preventing the return of the contracture. The graft of whole thickness skin is the most satisfactory solution of this problem.

Technique. The part should be thoroughly massaged for some time before the operation in order to improve the blood supply and make the tissues more movable. The scar tissue is then excised, and the part

straightened and fastened to a sterile splint padded with thick felt. The raw surface must be perfectly dry, and if the bleeding cannot be stopped it may be desirable to wait a day. The granulations should be level with the skin. The skin from which the graft is taken should be shaved, washed with soap and water, ether, alcohol, sterile water, and dried. The graft should be cut down to the fascia covering the muscle. As soon as cut it will shrink about two-thirds. This must be allowed for. The fat is trimmed off, and the graft perforated in several places. It is fitted to the site, and secured by four cardinal sutures of horsehair, supplemented, if necessary, by other superficial sutures. Slight, even pressure should be applied. The dressing may be of silver foil, gauze, dry or moist with saline, or flexible paraffin. In children under 10 years a plaster cast should be applied and not disturbed for three weeks.

Superficial areas may macerate and it may become desirable to apply small superficial grafts. A good result is elastic, soft, movable, and of normal color. There occurs at times a brown pigmentation, cyanosis from enlarged vessels, or the graft may become shriveled.

New blood vessels may be demonstrated by the third day and as early as the sixth day a wound of the graft will bleed. A thin layer of subjacent fat develops in two or three weeks. One must guard against trauma for the first few weeks, as the graft is, during this time, without sensation.

Isografts may give good results, but zoografts invariably fail.

C. H. L.

Gastric and Duodenal Ulcers. J. S. Rodman, *Boston M. & S. J.*, 1917: CLXVI: 834.

Indigestion and pain in relation to food intake are the leading symptoms. In gastric ulcer the pain appears within half an hour; in duodenal ulcer, within three to four hours and is relieved by eating. Rodman quotes W. J. Mayo that importance should be attached to the symptoms in the order of history, X-ray findings, physical findings and laboratory findings.

About 70 per cent of the cases give a characteristic history. Malignant change is impossible of accurate determination, even on gross inspection of the lesion at operation, but is to be suspected if anorexia becomes more pronounced, the pain more constant, haematemesis more frequent, and the vomited blood darker. Further, malignancy is likely to be found if the pain persists despite dietetic and medical measures, if achlorhydria follows hyperchlorhydria, if there occurs even a slight, but progressive, loss of weight. On the whole the laboratory findings have been over-rated, the X-ray under-valued. By the latter Carman, at the Mayo clinic, has diagnosed 83 per cent of the cases of ulcer coming to operation.

In view of the fact that the percentage of gastric cancers preceded by ulcer has been placed as high as 59.3 per cent by Mayo-Robson, 71 by Mayo Clinic, 72.1 by Moynihan, it becomes necessary to do more than gastro-jejunoscopy. In the cases of duodenal ulcer, this procedure is followed by healing, without malignant change. Gastric ulcers should be treated by pylorotomy, excision of ulcer or Paquelin cauterization in addition to gastro-jejunoscopy.

C. H. L.

Tunnels and Large Cavities in Bone. Norman F. Lock, *Brit. J. Surg.*, Bristol, 1916: IV: 145.

The presence of tunnels and large cavities in bones as the result of gunshot wounds is a common cause of persistent sinuses, which continue to discharge practically indefinitely. Tunnels occur in cases where a long bone

has been perforated and fractured by a bullet, and where, in treating the septic condition associated with these compound fractures, a drainage tube has been passed right through the middle of the bone, the bone uniting around a central cavity. The delay that takes place in the healing of the sinus is due to the fact that a chronic infection is present with which the tissues are unable to deal, since they are unable to obliterate the tunnel, the rigid walls of which will not collapse.

Attempts at sterilization of these cavities and tunnels by scraping and the use of disinfectants are almost uniformly unsuccessful, and therefore the use of bismuth or iodoform paste is doomed to failure. The treatment advised is subperiosteal resection of one wall of the tunnel, so as to convert the tunnel into a shallow trough. Dependent drainage is provided, and the bridge of soft tissues is pressed down into the bone by firm bandaging. Large cavities are treated similarly, bone being removed subperiosteally so as to convert them into shallow troughs. They are drained by counter-incision, and the bridge of soft tissue pressed down into the trough so as to obliterate the cavity.

C. H. L.

The Treatment of Infected Suppurating War Wounds. Rutherford Morison, *Brit. J. Surg.*, Bristol, 1917: IV: 659.

Under an anaesthetic prepare the wound for operation, using 1/20 carbolic acid. Open the wound, clean out thoroughly, and remove all foreign bodies. Mop the wound cavity and surrounding skin with methylated spirit. Fill the whole wound with the following paste: Iodoform, 16 oz., bismuth subnitrate, 8 oz., liquid paraffin, 8 fl. oz. Dress the wound with sterile gauze and absorbent pad. This dressing requires no change for days or weeks, if the patient is free from pain and constitutional disturbance. Re-dressing is done by removal of old dressings, cleansing with spirit, and applying fresh gauze. The infected discharge always comes from the surface of the wound near the skin. The paste in the depths is clean and should not be disturbed.

The advantage of this treatment is the relief of nurses of a great deal of work. The results are excellent. Twelve cases are detailed. There are some beautiful colored plates, including one of bismuth poisoning. Some cases of iodoform poisoning are also noted.

C. H. L.

Chylo-Haemothorax from Wounds Involving the Thoracic Duct. T. R. Elliott, *Lancet*, Lond., 1917: I: 872.

When, after a wound, there is obtained chest fluid which seems, to the naked eye, to be "frankly purulent," one is apt to diagnose an empyema and resect a rib. The error is to be avoided by getting bacteriological proof of infection, or upon the recognition of a peculiar offensive smell.

Characteristic of a chylous leak into a haemothorax are: The collection of fluid is on the left side. The effusion continues to increase on the third and fourth day (this is rare with bleeding beyond 24 hours). The chest fluid appears like pus, but occurs too early to be attributed to suppuration of a haemothorax. The fluid is opaque, red to creamy-grey. The centrifuge will separate out a red layer of blood, and a cream-white layer above. Under the microscope are to be seen small fat globules.

An intrathoracic wound of the duct is beyond the present skill of surgery.

C. H. L.

ABSTRACTS IN NEUROLOGY

The Value of Eye Manifestations Complicating Fractured Skull.

Martin Cohen, *Arch. Opth.*, 1917: LXVI: 258.

From a study of 75 cases of fractured skull, confirmed by X-ray and autopsy in fatal cases, in which examination of the pupils and fundi were made, the author arrives at the following conclusions:

Inequality of the pupils combined with absence of the light reflex is very common in fatal cases, and comparatively rare in the cases that recover.

Lesions of the fundus are relatively infrequent, especially in the cases that recover. Papillitis usually indicate the pressure of a meningitis, increased intracranial pressure, or a hemorrhage into the sheath of the optic nerve or its immediate vicinity. Contrary to the usual observations, choked disk was not observed in any of these cases of fractured skull.

The presence of a unilateral optic atrophy should lead to the investigation of a possible previous head injury, if all other possible causes are excluded.

In the fatal cases, the pupil was generally dilated on the same side as the corresponding cerebral hemorrhage.

Fundus examination immediately following skull injuries may be helpful from the medico-legal point of view, as it may give evidence of the pre-existence of contributing factors.

T. S. K.

Typhoid Meningitis: With Report of a Case. Bayne-Jones, *Am. J. M. Sc.*, 1917: CLIV: 55:

The meningeal manifestations in typhoid fever are divided into three groups, namely, meningism, serous meningitis, and purulent meningitis. Several cases of typhoid meningitis without other evidence of typhoid have been reported. In meningism mild transitory symptoms of meningeal irritation occur without demonstrable meningeal lesions or abnormalities of the spinal fluid. Observation of meningeal irritation is of considerable prognostic importance, as Netter has found the mortality among such cases to be three times as great as in cases showing no evidence of involvement of the nervous system. Removal of spinal fluid by lumbar puncture greatly improves the condition of the patient in some cases.

In serous meningitis there is an excess of spinal fluid under increased pressure. The fluid is usually slightly turbid due to mononuclear pleocytosis and contains the bacillus typhosus in considerable number. The agglutinins for the organism are also present in the fluid and are probably responsible for the fact that the organisms often fail to grow in cultures from such fluids. Claret and Lyon-Caen report a mortality of 40 per cent in 13 cases of typhoid fever complicated by serous meningitis.

Purulent meningitis, due to the typhoid organism, is uncommon. Out of 2,768 cases of typhoid fever seen at Johns Hopkins Hospital only 5 cases of purulent meningitis occurred. Among 290 cases of primary meningitis, 5 were due to the typhoid organism. Purulent meningitis in typhoid fever may occur at any period of the disease. The prognosis is uniformly bad, death occurring within three days of the onset of meningeal symptoms. The spinal fluid is turbid, with a yellowish tinge, and organisms are demonstrable in smears and by cultures. The cells in the spinal fluid are mostly polymorphonuclear leucocytes.

The author reports a case of purulent meningitis occurring in a negress, in the fourth week of typhoid fever. The marked symptoms of meningeal irritation began two days before lethal exitus. Autopsy showed an extensive purulent meningitis due to the bacillus typhosus. T. S. K.

The Bacteriology of Poliomyelitis. H. Greeley, *J. Lab. & Clin. Med.*, 1917: 11: 671.

From very careful bacteriological studies, the author concludes that the organism of poliomyelitis belongs to the same group as the organisms causing distemper in animals. Both give rise to similar clinical symptoms, but in the former paralysis is common, while in the latter it occurs only in about 5 per cent of cases. From cultures taken from fatal cases of poliomyelitis the author obtained a pleomorphic bacillus which caused paralysis in cats, dogs, rabbits and guinea pigs and, in an accidental passage through the experimenter, gave rise to abortive symptoms of the disease. Cultures taken from the nasal pharynx of the author produced paralysis in a rabbit and nerve lesions in guinea pigs.

The organism is saprophytic and grows very well in summer heat, this accounting for the prevalence of the disease during hot weather. It forms spores which resist the process of pasteurization.

While contact cases of poliomyelitis may occur either by direct transmission of the germ from animal to man, or man to man, the great mass of cases which comprise epidemics are caused by milk borne contagion. It seems probable that cows are "carriers" of the infection. T. S. K.

ABSTRACTS IN PEDIATRICS AND CONTAGIOUS DISEASES

Early Recognition of Poliomyelitis. Royal Storrs Haynes, *Arch Pediat.*, 1917: XXXIV: 401.

Haynes claims that the hysteria of the summer of 1916 on the part of the general public was due in part to the cry of total ignorance of the disease on the part of the medical profession. We probably know as much or more about poliomyelitis than scarlet fever. The disease has proven to be infectious. Various studies of Flexner, Lewis, Clark, Noguchi and other Americans have established the identity of the infecting organism and with it fulfilled Koch's postulates. Points of ingress in the human body and its distribution there have been discovered, also the lesions caused in the viscera and central nervous system. It has also been discovered that the egress of the infectious material from the body is through the nasal mucous and intestinal tract, that insects may be passive carriers and healthy human beings may transmit the disease. The fact is definitely established that it travels along lines of human contact, animals and insects being only passive conveyors of the infectious material.

Attention is directed especially to the two humped course of the disease. The first hump represents the period of incubation and early symptoms, lasts two or three days. Then comes a latent period, then the second hump or period of invasion of the central nervous system. For the sake of early instituting the treatment and isolating the victim, an early diagnosis is most imperative. It is most important to regard any illness of the child in summer, however slight, as a possible early stage of poliomyelitis; to protect such a child from fatigue or injury during the 3 or 4 days immediately following the subsidence of this illness; and to continue careful observation.

In the preparalytic stage the following symptoms may be noted: (a) General constitutional disturbance, fever, accelerated pulse, anorexia, prostration. (b) Pain and hyperesthesia. (c) Symptoms referable to irritation of spinal cord, as stiff neck, Kernig's sign, alteration or reflexes, tremors, fibrillary twitchings of muscles, paresis of certain groups. (d) Symptoms referable to irritation of basal ganglia and cranial nerves, as difficulty in swallowing, facial paralysis. (e) Dullness, drowsiness or excitement or convulsions.

The one outstanding symptom is the hyperesthesia. The child cries out when touched. Also the pain upon anterior flexion of vertebral column is a constant early sign.

The spinal fluid is usually clear—but may be hazy, and is under slight tension in first 12 to 24 hours. Cells of mononuclear type are abundant. Albumin and globulin are present and the fluid is negative bacteriologically.
C. W. W.

The Mineral Metabolism of Experimental Scurvy of the Monkey.

C. P. Harvard and T. Gngvaldsen. *Johns Hopkins Hosp. Bull.*, 1917: XXVIII: 222-225.

Owing to the fact that the metabolism of the monkey approaches somewhat closely that of man and that although experimental scurvy has been produced and studied histologically and clinically the metabolic studies have been omitted in most experiments, the authors decided to repeat the work of other investigators. They have paid particular attention to the mineral metabolism. Their first animal, a female *Macacus rhesus* was used to make certain that they could produce the disease in their laboratory. The Merrell-Soul skimmed milk was given in sufficient amounts for the caloric needs for four months. The animal was then placed on condensed milk (the Ferndale condensed milk). Within one month scorbutic symptoms appeared and when chloroformed slightly less than three months later the anatomical diagnosis was as follows: Scurvy, with hemorrhage and softening of the bones of the shoulder and pelvic girdle (with the exception of the clavicles) and extremities and upper and lower alveolar processes; granular degeneration of the liver and kidneys; amoebic colitis.

The second animal was placed on a weighed diet of bananas and milk and the normal metabolism studied. A week later the condensed milk diet was begun. Typical scurvy developed. The authors conclude from their studies that the changes in the mineral excretion of the monkey during the scorbutic period were not sufficiently significant to admit of easy interpretation. The marked loss of the various mineral substances encountered in previous experiments with man and guinea-pigs were not observed in their present series and that studies of the intake and output of the inorganic elements in human adult scurvy and experimental scurvy of the guinea-pig and the monkey does not yield sufficiently decisive information to warrant an explanation of the pathogenesis of scurvy.
H. O. R.

The Value of the von Pirquet Test as Controlled by Necropsy Findings.

J. H. Mason Knox, Jr., *Am. J. Dis. Child.*, 1917: XIV: 47-51.

From November, 1912, to April, 1917, 2,940 cases were admitted to the wards of the Harriet Lane Home of the Johns Hopkins Hospital with a mortality of 750. Autopsies were performed on 324; the age at death varied from birth to 12 years.

Twenty per cent, or 68 cases, showed tuberculous lesions at the post-mortem examination; von Pirquet tests had been carefully made in 61 of these

cases with a positive finding in 45 and a negative finding in 16. Of the latter, 12 had miliary tuberculosis, two had tuberculous meningitis, and the remaining two had advanced pulmonary tuberculosis with cavity formation. In all these 16 cases the test had been performed within a comparatively short time before death. The work of Knox confirms the work of von Pirquet and others, establishing the value and reliability of the tubercular skin test in children "except in those extremely ill patients where the presence of tuberculosis can readily be established by physical examination." J. E. Mc.

Systematic Boarding-Out Versus Institutional Care for Infants and Young Children. Henry Dwight Chapin, *New York M. J.*, 1917: CV: 1009.

The heavy morbidity and mortality that have long existed among neglected and abandoned infants are a source of anxiety and reproach to workers in this field. There are only two ways of caring for these children. They can either be boarded out or collected in institutions. There are two factors that militate in favor of a high death-rate in institutions: (1) Lack of individual care; (2) lack of fresh air. It may also be said that the child boarded out is in less danger of infection than he is in one of the epidemics which sweeps every institution. Children boarded out require careful and well organized supervision by physicians and visiting nurses. Chapin cites the results obtained by the Speedwell Society, at San Francisco, and by the Children's Department of the Massachusetts General Hospital. The results obtained are far better than any obtained by the best institutional care.

H. C. K.

The Use of Immune Serum in the Treatment of Whooping Cough. Adrien Bleyer, *Am. J. M. Sc.*, 1917: CLIV: 39.

The author divided the children treated into three groups. All children were under three years. In Group A 15 children were treated with convalescent's blood. The course of the disease was in no definite way different from that usually seen except in three cases. In any group this number of cases might run an unexpectedly mild course without attracting much attention. In Group B the blood was obtained from persons who had had the disease at more remote periods. One case in this group, receiving blood from the mother who had pertussis twenty years before, showed quite as satisfactory improvement as any in the first group. Group C were given injections of normal blood as controls. There was one case which seemed to be very favorably affected by the injections of normal blood. This result is similar to some obtained with foreign protein in arthritis, typhoid, etc.

H. C. K.

ABSTRACTS IN GYNECOLOGY AND OBSTETRICS

Cesarean Section in Placenta Previa. Geo. M. Boyd, *Am. J. Obst.*, 1917: LXXVI: 26.

In 1901 the author advocated Cesarean section for placenta previa when the child is viable, the cervix rigid, or the foetus transverse. Hirst stated his mortality, with the older methods of treatment, was only one case in twenty-four. Holmes considers that for every baby saved by Cesarean section in placenta previa we sacrifice a mother's life. Deaver tried anterior transperitoneal hysterotomy.

In 1913, at the Seventeenth International Congress, at London, Doederlein reviewed 5,615 reported cases of placenta previa. He believes Cesarean section is sometimes useful. Veit, DeLee, Karr and Davis approved the operation; while Naegel, Byers and Cameron did not.

At the Philadelphia Lying-In, 147 cases of placenta previa have occurred in a total of 8,697 maternity admissions. Ten per cent of these were central. The maternal mortality was 7, that is, 11 per cent. Two had Cesarean sections; one of these mothers died. Abdominal surgeons are the ones who advocate section, being more familiar with the abdominal than with the vaginal route. In other words, "Their personal limitations furnish the great indication for abdominal delivery, and not the exigencies of the case." The author still believes in section in proper cases, but has not had opportunities to employ it recently. Cesarean section does not necessarily mean a live baby. The author is now convinced that section produces a higher maternal mortality than the older methods. We are not justified in running the risk except in special cases. Markedly contracted pelvis is still the only absolute indication for Cesarean section. A rigid cervix with a placenta previa is rare, but when found may justify section.

A table of 59 cases of placenta previa accompanies the article.

J. T. S., Jr.

Fatty Tumors of the Uterus, with the Report of a Case and Notes on Classification. C. W. W. Elkin and S. R. Haythorn, *Surg., Gynec. & Obst.*, 1917: XXV: 72

Uterine tumors of fat-containing tissue are of uncertain origin. The cells containing the fat have never been identified. Only fourteen cases were found in the literature; these are briefly reviewed. Some are called interstitial lipomata, some fibromata, and some are spoken of as types of degeneration in leiomyomata.

The authors' specimen was from a negress aged 46, single. The tumor occupied the posterior wall of the uterus, measuring 16 x 15 c.m. It was well encapsulated. On section it showed soft, fatty, yellow-white tissue. Two smaller detached tumors were not fatty. Microscopically, large islands of fatty tissue were traversed by bundles of smooth muscle and connective tissue cells.

The histogenesis is uncertain. Four principal theories have been advanced. 1. The tumor develops from "rests" of embryonic fat cells left behind in development. This is unlikely, as embryologically no fat cells occur in the uterus or broad ligaments. 2. Fat cells grow in along vessels and nerves. This is unlikely, because of the thick tumor capsule the ingrowth must penetrate, and because the vessels in the tumors lie in the connective tissue bundles, not in the fat lobules. 3. Muscle cells or connective tissue cells can change into fatty cells by absorption of fat droplets. This is possible, but seems unlikely in the case of this specimen, because no transition stages can be found between fatty cells on the one hand and muscle or connective tissue cells on the other. 4. The fatty cells arise from lipoblastic dislocations. This view seems least open to criticism. The authors believe, therefore, that their tumor arose from true lipoblasts, and is a lipoma. They call it "Lipoblastoma uteri."

J. T. S., Jr.

Phenolsulphonephthalein Test in Pregnancy. Morris K. Smith, *Bull. Lying-In Hosp.*, N. Y., 1917: XI: 134.

Normally, 60 to 80 per cent of phthalein is excreted in the first hour after the injection, beginning 5 to 10 minutes after the dose is given. The literature of tests on pregnant women is reviewed. The articles indicate that in pregnancy the excretion is depressed, particularly when eclampsia threatens.

The present experiments were undertaken to find if phthalein tests can give an early indication of oncoming toxæmia. Of 27 strictly "normal" pregnancies, the average two-hour excretion was 58%, with extremes of 18% and 81%. The first hour average was 38%. A summary of the cases showing abnormalities follows:

Abnormal Sign or Symptom	No. Cases	Average 2-Hr. Excretion
Slight albuminuria	17	66%
Casts	8	73%
Headache	8	49%
Blood pressure over 130.....	7	53%
Nausea and vomiting.....	6	57%
Dead foetus	2	56%
Pre-eclamptic tox.	10	37%
Eclampsia	3	Trace
Hyperemesis	3	72%
Labor	4	42%

Conclusions:

1. The phenolsulphonephthalein test shows a somewhat diminished average excretion in the latter months of pregnancy.
2. In toxic cases, and in labor, the phthalein excretion is diminished.
3. Women in the latter months of pregnancy who suffer from mild symptoms regarded as danger signals—headache, hypertonus, vomiting, albuminuria, etc.—give a phthalein test in general the same as in normal cases. A diminution of as much as 10 per cent may be noted in headache cases.
4. The phthalein excretion of women in the latter months of pregnancy show wide and inexplicable variations.
5. The test at present affords no help to the obstetrician.

J. T. S., Jr.

ABSTRACTS IN DERMATOLOGY

Experimental and Clinical Studies of the Toxicity of Dioxydiamino-Arsenobenzol Dichlorhydrate. Jay Frank Schamberg, John A. Kolmer and George W. Raiziss, *J. Cutan. Dis. incl. Syph.*, 1917: XXXV: 286.

As a result of prolonged experiments on rabbits, rats and white mice, with salvarsan and its congeners, the authors draw the following conclusions:

(1) Salvarsan may be used in concentrated solutions, in animals, 0.6 grms. in 10 c.c., without evident increase in toxicity. However, they do not advise this in man.

(2) Failure to neutralize with alkali leads to an increase in toxicity of 50 to 60 per cent. in solution of one-half to one per cent. concentration.

(3) The addition of a moderate excess of alkali does not increase the toxicity. It may have other untoward effects however.

(4) The use of sterile, fresh distilled water appears to possess advantage over sterile, stale distilled or undistilled water as regards toxicity; though in their experiments the difference was not pronounced.

(5) Salvarsan in alkaline solution tends to undergo oxidation on standing, with consequent increased toxicity, but this substance varies greatly in rapidity of oxidation and in degree of associated toxicity. The drug should be used reasonably promptly after preparation. If two to three hours' delay is unavoidable the solution should be kept in a cylinder, full to the stopple so that no air is present.

(6) Several different types of reactive phenomena may occur after the use of salvarsan—(a) immediate, (b) early and (c) delayed. The immediate symptoms are due to a paresis of the blood vessels; the early symptoms coming on a few hours after the injection are febrile and gastrointestinal, and the delayed symptoms may be referable to the brain or the liver and gastrointestinal tract.

(7) There is no one cause of reaction. The etiologic factors in the production of reactive phenomena may be related to (a) the patient, (b) the technique, (c) the medicament. The authors believe the most important factor in the causation of reaction is referable to the drug. They think the immediate vaso-paretic symptoms are due to traces of an unidentified impurity in the drug, which they term *substance X*. They do not believe these to be due to arsenoxide as is maintained by many workers.

(8) Salvarsan and its congeners are not compound of absolute chemical purity, therefore one must expect variations in its toxicity and biological effects.

(9) Salvarsan is a safer substance than mercury and can be tolerated intravenously by white rats in fifty times the dose of the latter, weight for weight.

H. N. C.

The Spirochetal Content of the Spinal Fluid of Tabes, General Paresis, and Cerebrospinal Syphilis. Udo J. Wile, *Am. J. Syphilis*, 1917: I: 84.

In a series of cases suffering with the above conditions the spinal fluid was injected into rabbits testes. The fluids generally gave positive Nonne-Apelt, high cell counts, positive Noguchi and Wassermann reactions. No treponema were found with a dark field illuminator. In from four days to two weeks, treponema were found in greater or lesser number in 62.5 per cent. of the animals. Though no organisms had been previously found in any of these fluids one must conclude from these findings that in all luetics with spinal fluid involvement the fluid must be regarded as infectious as any other of the body fluids.

H. N. C.

The Sanitary Attack Upon Syphilis. William Allen Pusey, *Am. J. Syphilis*, 1917: I: 125.

The sanitary attacks upon syphilis includes two sorts of measures, (a) measures looking to the control of the infected; (b) measures providing safeguards against infection.

The author does not believe in public health regulation of notification and of prostitution. He would rather institute a therapeutic attack on the

disease insisting on the state and municipality establishing proper facilities for taking care of these cases. There should be proper skilled medical service, salaried medical men, adequate equipment for diagnosis and treatment. The clinics should be well organized with a follow-up system for patients. Provision should be made for a night clinic where those able to pay a small fee could be treated.

Moreover, we must have better facilities in our medical schools for the teaching of syphilis—more time must be given to it. Public education will do much to prevent infection in others.

H. N. C.

The Teaching of Syphilis. H. H. Hazen, *Am. J. Syphilis*, 1917: I: 135.

There is a real need for the better teaching of this disease, especially in its early stages. The vast number of intelligent men who develop tabes, paresis and various other visceral manifestations are mute witnesses to this fact.

There should be more time devoted to the subject in our medical schools, the patient should be better handled and more carefully studied. Clinics should be better equipped with instruments and laboratories; and they should always have access to beds in a hospital for their cases. The author thinks that the teaching should be done in one department by a director, preferably a dermatologist, in co-operation with a special corps of selected men.

H. N. C.

ABSTRACTS IN OPHTHALMOLOGY

Prophylaxis of Wounds of the Globe. F. Terrien and G. Cousin. *Archives d'Ophthalmologie*, Nov.-Dec., 1915. Abst. the *Ophthalmoscope*, 1916: XIV: 332.

After a survey of the eye cases in the Ophthalmic Centre of the Ninth Military District, the authors concluded that wounds of the globe in warfare are very variable, but practically all can be divided into two groups. In the first group are included those cases of wounds occasioned by bullets, large fragments of shells, grenades, bombs, etc., while in the second group are those cases of wounds caused by minute fragments of shells, grenades and bombs. This second group comprises wounds of the globe by small foreign bodies, which in a majority of cases, have sufficient penetrating power to perforate the anterior portion of the globe, but which is insufficient to penetrate the posterior walls. In six months 561 cases of this class occurred in this one Ophthalmic Centre in France. There was blindness, or only perception of light, in 360 of these cases; in 49 the vision was not greater than 2/10; and in 142 only was the vision better than 5/10. In 122 cases enucleation was found necessary, as a rule, several days after the injury, and due to secondary effects rather than to the primary destruction of the globe. Compared with the frequency of the more severe cases in the first group, the author found that four out of five cases belonged to the second group. The prophylactic measure suggested by the authors is the wearing of goggles consisting of metallic shells, convex outwards, 1 mm. in thickness, and of such a size as to cover the whole of the orbital cavity and to rest on the orbital margins themselves. The "seeing part" of each goggle is represented by two or three fine holes and several slits, one vertical and others horizontal, diverging outwards like outstretched fingers slightly separated, the middle one being actually horizontal.

The shells are lined with mica, and are fitted into rubber circles which are held on in the usual way by rubber bands hooking together behind the head. They are not to be worn constantly, but to be kept handy for immediate use when a bombardment is to be expected.

R. B. M.

On Ocular Surgery in Ambulances at the Front During the First Year of the War (Aug., 1914-July, 1915). De Saint-Martin, *Ann. d'Oculistique*, Jan., 1916. Abst. the *Ophthalmoscope*, 1916: XIV: 333.

There were treated in this French divisional ambulance during this period 3,879 cases of disease, of which 3.63 per cent. were ophthalmic, and 4,613 cases of injury, of which 1.36 per cent. were ophthalmic. This percentage does not differ materially from Morax's estimate of 1 per cent., in recent wars, but probably a large number of eye injuries are complicated by brain injuries, and the patients never reach the hospitals. The injuries were as follows: Thirty penetrating wounds; 19 wounds of the eyelids; 13 contusions of globe; 8 penetrating wounds of cornea; 7 burns of cornea and conjunctiva by explosives; 5 penetrating wounds of orbit; 3 traumatic cataracts. Of the diseases 88 were cases of conjunctivitis, the remainder being old retinal, choroidal or optic nerve affections, or errors of refraction. The number of penetrating wounds represents nearly half of the total number of surgical affections of the eye. Of these 22 required enucleation or evisceration immediately or after a short interval, and it is the impression of the author that eventually the majority, if not all, of the remaining 8 eyes will also have to be removed. It follows that the prognosis in penetrating wounds of the eye caused by projectiles, is very bad.

The author incidentally gives an account of the ocular effects of "lachrymatory" shells, which contain a gas consisting chiefly of bromide of benzyl. Some of these shells exploded at a distance of several hundred meters from the buildings in which the ambulance was established. A few minutes later, those who were working in exposed positions in the buildings, felt a stinging sensation in the eyes, at first slight, but rapidly becoming more intense and accompanied by lachrymation, photophobia, and conjunctival injection, with dryness of the throat in the severer cases. A little later persons in less exposed positions were similarly affected, and inquiries showed that eventually all the doctors, orderlies, and patients presented similar symptoms in different degrees. The discomfort lasted about an hour and a half and was relieved by bathing with a lotion containing sulphate of zinc and boracic acid.

His experience causes the author to conclude that the presence of ophthalmic surgeons in ambulances established in the immediate proximity of the firing line is not only advisable but necessary, in order that they may by early examination and treatment, hasten the healing of slight ocular injuries and prevent the occurrence of complications in the more severe cases. He considers that the equipment of such an ambulance should include an X-ray apparatus and an electro-magnet.

R. B. M.

Eye Wounds Received in War. Cassimatis, *La Clinique Ophthalmologique*, Jan., 1916. Abst. the *Ophthalmoscope*, 1916: XIV: 335.

The author reports two cases of ocular injury: In the first case a bullet passed through the mouth, carried away an incisor tooth, injured the tongue, and eventually passed out behind the ear. The cervical sympathetic was injured and caused symptoms referable thereto. The patient could not see well with the corresponding eye while seeing well with the other. There was no direct eye injury. Treatment by suggestion was followed by great improvement of vision.

In the second case, there had been no direct injury to the patient, he having been thrown down by an explosion. The optic nerves became atrophic and there were cerebral symptoms. The conclusion was that the optic atrophy had been occasioned by cerebral lesions produced by the wind of the shell explosion.

R. B. M.

ABSTRACTS IN LARYNGOLOGY, RHINOLOGY AND OTOTOLOGY

Traumatic Deflections of the Septum and Their Treatment. Orendorf, *Laryngoscope*, 1917: XXVII: 445.

According to the author it is difficult to conclude definitely just what part traumatism plays in the causation of septal spurs and deflections. He quotes Mosher as ascribing those to trauma where the axis of the deflection or spur is vertical, while the axis is horizontal in those which are developmental. Unfortunately cases of recent fracture are rarely seen by the rhinologist, but more by the surgeon or family physician. Frequently they receive no treatment or attention at all and the rhinologist is called in later when more or less complete nasal obstruction has taken place. Operation in such cases presents unusual difficulties, as in the author's case where "along the line of the old fracture the mucous membrane, perichondrium and bone were almost one structure." He then cites two cases where the submucous resection was done, in the one instance one week and in the other five (5) days after the initial injury. Excellent results were obtained in these cases. Although the author has had no opportunity to try a submucous resection immediately after an injury, he suggests this as possibly giving better results than our present methods of treatment. (In cases of old fracture with extensive adhesions perforation is often the result of attempting a blunt, rather than a sharp dissection.—Ed.)

W. B. C.

Cerebral Symptoms After Nasal Operations. St. Clair Thompson, *J. Laryngol*, Lond. 1917: XXXII: 8.

In the above article Thompson cites a case where alarming symptoms followed Moure's operation on the ethmoid and antrum for epithelioma, although "nothing untoward happened during the operation." The alarming symptoms subsided almost as rapidly and the case went on to complete recovery. He concludes that the case was one of cerebral irritation and compression, due to blood and edema, and not one of meningitis. In two (2) other cases, also for malignancy, the cribriform plate was involved in the process and removed with forceps. In both the dura was exposed and recognized, yet no threatening symptoms followed.

Thompson concludes that increased danger in nasal surgery is due to the fact that infection is here probably more virulent, and that anatomical abnormalities are much more common. In comparing nasal with mastoid surgery he calls attention to the fact that, in the former, drainage is much more inadequate and that we can never expose our field as we can in the surgery of the mastoid. In the latter the lateral sinus or dura may be exposed with little or no danger. Here the dura is ever ready "to throw up defensive breastworks. The cribriform plate is not only perforated and brittle like a water biscuit, but is traversed by fibres of the olfactory nerve, each one of them with its lymphatic sheath, allowing free communication between the olfactory region of the nose and the meninges." He thinks that infection is often by this latter route and recommends lumbar puncture where there is a "change in the mental state and a rise in temperature."

W. B. C.

On Lung Abscess as a Sequel to Tonsillectomy. Dr. Ira Frank, *The Laryngoscope*, 1917: XXVII: 474-783.

During a ten-year period at the Michael Reese Hospital, there were 37 cases of lung abscess, three of which followed tonsil operations and are reported by the author. The cases were remarkably similar. All were in young adults, and followed tonsil operations under general anesthesia. In two the operation had been crudely performed and there had been post-operative bleeding. All presented about the same symptoms; fever, pain in

the chest, cough with copious foul expectoration and progressive loss of weight and strength. The abscess was opened in two cases and all had a protracted convalescence.

Communications addressed to 50 surgeons, internists and laryngologists, selected at random through the country, brought informal reports of 15 cases of lung abscess following tonsil operations.

It is apparent from the study of the reported cases that two groups may be formed. In the largest groups are those cases in which symptoms appear within 36 hours after operation. In the smaller group symptoms appear after four to 14 days. The author suggests that the infection probably occurs in the first group by aspiration of blood and septic material, and in the second by septic emboli.

The conclusions in brief are:

"Lung abscess may follow tonsillectomy. The majority of cases occur after operations under general anesthesia in young adults of 20 to 35 years."

"The majority of lesions are due to aspiration and therefore largely preventable.

"The more general use of local anesthesia for tonsil surgery, with the abolishment of rapid, tissue-destroying operative methods, and a respectful attitude toward hemorrhage and the secretions of the operative field will do much to relieve the surgeon of serious liability." C. E. P.

ABSTRACTS IN PATHOLOGY

Toxin and Antitoxin of and Protective Inoculation Against *Bacillus Welchii*. Carroll G. Bull and Ida W. Pritchett, *J. Exper. M.*, 1917: XXVI: 119.

The authors sum up their work as follows:

(1) Both the full cultures and supernatant fluid are hemolytic when injected directly into the circulation of rabbits and pigeons.

(2) The toxicity of cultures is diminished by Berkfeld filtration, heating to 62° C. and entirely destroyed by heating to 70° C. for 30 minutes.

(3) Successive injections of graded doses of the toxic filtrate gives rise to active immunity, the blood of immunized rabbits being capable of neutralizing the toxic filtrate both in vitro and in vivo.

Antitoxic serum neutralizes the toxin of heterologous strains.

A. A. E.

Methods for the Determination of *Pneumococcus* Types. Francis G. Blake, *J. Exper. M.*, 1917: XXVI: 119.

The work on the differentiation of the various strains of pneumococcus, initiated by Cole, Dochez, Gillespie and many others, bids fair to become one of the most brilliant achievements in the domain of clinical bacteriology.

Not only is it extremely interesting, but also of great practical importance. We know, for example, that of the four groups of pneumococcus, the group III is the most fatal, causing mortality of over 50 per cent; this knowledge is of course of very great prognostic importance; again, in the preparation of immune serum, it is essential to know the agglutinating properties of the causative strain before it can be classified, and the proper serum be given.

This work has even suggested some iconoclastic ideas as to the predisposing causes of pneumonia: an alcoholic has always seemed to be an early prey to pneumonia because, we claimed, harboring, as many of us do, the pneumococcus in our mouths, an alcoholic debauch will lower the patient's resistance, and start up the disease; since, however, in many cases the pa-

tient who harbors an organism of group IV before the development of pneumonia is found to be infected with an organism belonging to the group II and III, this theory does not sound very convincing.

Dr. Blake has simplified the identification tests in substituting for the agglutination the precipitin test, the advantage of the new test being saving much time; complete technique of the new method is given. A. A. E.,

Cicatrizization of Wounds. VI—Bacteriological Asepsis of a Wound.

A. Vincent, *J. Exper. M.*, 1917: XXVI: 83.

Wounds were irrigated with Dakin's solution or treated with chloramine-T paste to determine to what degree they became aseptic.

In test-tubes 2 c.c. Dakin's solution or 1 c.c. of 1 per cent solution of chloramine-T were necessary to render 5 c.c. broth sterile. However 0.4 c.c. Dakin's solution in 0.3 c.c. of the chlormine-T solution retarded growth of the staphylococcus used.

Of 20 wounds treated by either of the above methods seven or about 35 per cent were bacteriologically sterile. However, when bacteria are absent in films the wound may be safely sutured. M. L. R.

Cicatrizization of Wounds. VII—Use of Chloramine-T Paste for Sterilization of Wounds. Maurice Daufresne. *J. Exper. M.*, 1917: XXVI: 91.

Chlorine-T was used because of its high bactericidal power; absence of caustic action on skin, possibility of exact estimation of strength and stability of high temperature.

It was made into a paste according to formula:

Neutral sodium stearate	85 gms.
Chloramine-T	4-10 gms.
Distilled water	1,000 c.c.

The soap does not irritate the wound, and is slowly dissolved. The author gives exact directions for preparing the paste. M. L. R.

DEPARTMENT OF THERAPEUTICS

Conducted by J. B. McGEE, M. D., Cleveland

Digitalis: In the *New York Medical Journal* for June 16th, S. Mark White and R. E. Morris emphasize the uncertainty of the usual methods of administering digitalis. Preparations differ in activity and we cannot be certain of the amount of digitalis required, and in some cases, unless watched from the start, cannot be sure that the patient receives a sufficient dose of the drug, for a fair trial in the absence of the development of any of the characteristic signs of action. They therefore used the Eggleston method of giving the drug. This consists in using digitalis which has been standardized upon the cat according to Hatcher's method, which measures the activity of the drug in terms of the cat unit. This unit is the amount of digitalis in milligrams of the leaf required to kill one kilogram of cat weight. According to Eggleston, the total amount of digitalis required to produce full therapeutical effects is 0.146 cat unit to a pound of the patient's body weight. Employing this unit, the dose was calculated for each patient, and one-half of the total was administered as the initial dose; one-half of the remainder was given from four to six hours later, and the remaining quarter was given in two equal doses at further intervals of from four to six hours.

It was found possible in this way to secure pronounced digitalis action in practically every case within a period of eighteen to twenty hours after beginning the administration. Although the individual doses used seemed very large, no ill effects whatever resulted from their use. Further, by this method, the effects could not only be secured much more promptly than usual, but also the distressing symptoms of nausea and vomiting seldom appeared. Following the rapid induction of digitalis action, a large proportion of the patients were given tonic digitalis treatment, which consisted of administering from one to three mgs. of the standardized tincture daily. Observations were also made of different varieties of native digitalis, which showed the native drug to be of a potency quite equal to the best imported, and there was no difference in activity between the first and second year plants. Cary Eggleston, in the same issue, pointed out that both digitalis and digitoxin were still believed by many to cause vasoconstriction, and elevation of blood pressure in man. From a careful analysis of facts, however, he concluded that there was no evidence that either digitalis or digitoxin had any direct action on the vessels when given to man, even in large therapeutical doses.

Sinusitis: In the June number of the *Therapeutic Gazette*, Geo. B. Wood considers the medical treatment of sinus disease. While recognizing that the treatment of suppurative foci, no matter where found, is essentially surgical, the inflammatory conditions of the accessory sinuses, especially when acute, can be influenced by medicinal treatment because of the peculiar anatomy of the accessory sinuses. He is convinced that frequently acute sinusitis has become subacute or even chronic from too much surgical interference. When the symptoms of sinusitis are purely local, without general disturbances, he does not believe that any form of internal medication or general treatment is of much value, unless it has for its object local effect. If accompanying the sinus disease there is evidence of general systemic infection, the conditions must be met with appropriate treatment. It is only in rare instances that acute sinus infection *per se* gives rise to much systemic intoxication. There is no doubt that atropine is of distinct value in the serous stage of the disease. By checking secretion it materially aids the drainage not only from the nasal fossae itself, but probably by lessening the edema of the lining mucosa of the sinus renders more patulous the internal aspect of the ostium. In chronic suppurative conditions of the nose it is of no value, and perhaps harmful. Atropine should be given in small doses at frequent intervals, until some dryness of the throat is noticed, with the secretions thick and tenacious. Iodide of potassium in small doses is sometimes helpful in aiding drainage. Hexamethylenamine in large doses seems at times to abort the attack, if given during the first twenty-four hours. He has never seen benefit, however, when given after the condition had existed a few days. If given in doses large enough to affect the nasal mucosa there is danger of cystitis. Fortunately this clears up rapidly on withdrawal of the drug, and the free drinking of water. If needed, drugs to control pain are perfectly permissible, but in few cases is morphine necessary, as sinus headache usually comes on some time in the early morning, and disappears in the late afternoon, so that the patient is free from pain during the night, and this is especially true in the subsiding stages. Locally strong solutions of adrenalin should be absolutely avoided, as the following relaxation will sometimes produce an absolute blockage of the whole nasal cavity for twelve hours or more. In a well-diluted solution it can be used by the patient at home when the engorgement of turbinal bodies continues. He advises antipyrin six grains, 1-1000 adrenalin solution one-half drachm, and water enough to make one ounce; 5 to 10 drops in nose every six hours. Vaccine therapy is of doubtful value.

Nervous Syphilis: Intraspinal medication in treatment of syphilitic diseases of the nervous system is discussed by Lewis M. Gaines in the *Medical Record* for June 16th. His experience has been limited to the Swift and Ellis method, which he believes the safest and as productive of good results as any method. This statement does not apply to paresis, where all his endeavors have been fruitless. After describing the technique, he states that the patient should be kept in bed 24 hours after injection, and this may be repeated every 10 days or two weeks. He believes it a safe procedure where careful technique is followed. In approximately 100 injections of salvarsanized serum, he has had no alarming symptoms whatever, and the only reactions were pains in the legs and a rise of one or two degrees in temperature lasting a few hours. He concludes that the type of case which is benefited is first of all the early case of no matter what type. As a rule, those showing meningitic involvement, as evidenced by high cell count and globulin content, have a better prognosis. The majority of responses to his inquiries consider paresis the least amenable to treatment, with the notable exception of Cotton, who has had a very large experience with this disease, and whose optimistic opinion concerning it is entitled to corresponding consideration. All agree that intraspinal therapy is practically free from danger when due care is exercised in preparation of the serum, in technique of administration, and in the after care of the patient. There are three principal methods of intraspinal therapy. The Swift-Ellis method, the Ogilvie, and the use of mercurialized serum. Each method has its advocates, but the general trend of opinion seems to be in favor of the Ogilvie method. Good results are being obtained by all methods. The method of intraventricular therapy, using serum prepared by Ogilvie's technique, is reported only by Cotton, and used by him in paresis. This method promises unusually good results. The question of when to use intraspinal therapy is of importance. Many use it when older methods fail, but Gaines feels that valuable time may be saved in using it from the beginning, especially in tabes and paresis, while in cerebrospinal syphilis, intravenous salvarsan mercury and potassium iodide may first be tried. We have not recognized until lately the importance of long and frequent treatment in syphilis, and especially in neurological syphilis. Those with most experience advocate intraspinal injections every one to two weeks, or intravenous injections once or twice a week until the four reactions become negative. It must be emphasized that the early cases are the hopeful cases.

Tetanus: In the May number of *American Medicine*, L. Sexton writes that in considering the treatment of tetanus it should be remembered that in its acute form it has a ninety per cent mortality from a toxine four hundred times more poisonous than sulphate of strychnine. In civil surgery tetanus is very rare except among railroad laborers, stable and dairymen, who get punctured, lacerated or confused wounds, into which dirt or filth has been ground. Prognosis depends upon the virulence of the infecting organism, range of temperature, and period of incubation. The usual incubation period of tetanus is from three days to four weeks. Elimination and nerve sedatives are the two main points to be kept in mind in the treatment of this terrible disease. Prevention of tetanus by proper disinfection of all wounds and immunizing doses of serum are far better and safer than treatment of the disease after it has developed. Out of sixty thousand wounded during the present war, in Bavaria four-tenths of one per cent died of tetanus, even though they had the prophylactic injection of serum in most cases; hence the need of using all other legitimate preventive measures, including Bier's hyperemia, or the actually cutting out of the wounded tissue. The mistake in prevention is giving just one dose of anti-tetanic serum, when it should be repeated within from seven to ten days in order to thoroughly protect the patient. Gunshot wounds, compound fracture and the puerperal

state, as well as the umbilical cord, are favorable to the development of tetanus. Meltzer's treatment is injecting twenty minims of a twenty per cent solution of sulphate of magnesia into the spinal canal. Irons used five thousand units of antitetanic serum intraspinaly and ten to twenty thousand intravenously as soon as disease is recognized. Sexton's cases that recovered did so by alternate use of syrup of chloral, bromide of potassium, morphine and atropine.

Optochin: The *Medical Council* for June (from the *Prescriber*) comments on the case of "optochin." This is a trade name for ethylhydrocupreine, a derivative of cupreine, one of the cinchona alkaloids. A careful sifting of the various extracts from the literature reveals the fact that, with one exception, all favorable comments come from Germany. Observers in Britain and America, with the one exception referred to, all report against it, and even one or two German observers say the same thing. It had no effect on pneumonia, it is frequently toxic, and it almost invariably has a deleterious effect on the eyes. We all know how German clinical reports as to new drugs are usually engineered, and optochin has the appearance of being a case in point. The *Council* continues, that numerous American articles have been published, mainly by ophthalmologists, commending the drug. However, it has not seemed to make any headway among our eye specialists in general. Comment in America has been all but uniform against its employment in pneumonia. We feel it only just to our readers to record the fact that optochin appears to be a failure, is the statement of the *Council*.

Gall Stones: In the May number of the *Journal of Pharmacology and Experimental Therapeutics*, David I. Macht writes upon the comparative effects of the opium alkaloids, individually and in combination with each other, on the gall-bladder. It is well known that for the relief of biliary colic, full or large doses of morphine must be given, and are often to be repeated. The beneficial effect of morphin in such cases is due entirely to its central nervous action, the local effect of morphin through its stimulating action on smooth muscle tending to aggravate the spasm. The rational procedure in such cases seems to be the employment of papaverine or of one of the opium combinations such as pantopon, which act both as central analgesics and at the same time tend to quiet or relax the local spasm of the gall-bladder. Macht has himself treated successfully three cases of gall stone colic with papaverine injections, in one case on repeated occasions. Again, it has been the experience of a number of clinicians with whom he has communicated, that opium seems to be more effective in gall stone colic than morphine. His conclusions are:

(1) Morphin, codein and thebain have either no appreciable effect upon the tonus and contractions of the gall-bladder or tend to stimulate them.

(2) Papaverine, narcotin and narcein tend to inhibit the contractions of the gall-bladder and to decrease its tonus.

(3) In a combination of total opium alkaloids, the benzyloquinoline effect on the smooth muscle predominates.

(4) Atropin, in small or therapeutic doses, does not relax the tonus of the gall-bladder.

(5) The above observations having been made, on the one hand on the isolated gall-bladder, and on the other hand corroborated on the gall-bladder in situ, seem to point to the superiority of papaverin or a combination of total opium alkaloids over morphin in the treatment of biliary spasm or colic.

Hyperthyroidism: Henry H. Harrower, in the *American Journal of Clinical Medicine* for April, remarks concerning the treatment of hyperthyroidism that its immediate treatment centers on the control of the heart's action, and this is accomplished most satisfactorily by placing the patient at absolute rest in bed in a quiet room away from the numerous worries and noises of the home. Cold applications over the region of the heart and of the thyroid gland exert some beneficial effect. By far the most important remedy in his experience is the extract of the posterior pituitary lobe, which may be given by intramuscular injection daily in doses of a one-half to one mil. (c.c.) of the usual standard solution. He has had occasion to use numerous sedative remedies, and none have seemed to exert so particularly beneficial an effect as this organic therapeutic wonder-worker. The usual effect of these injections is the reduction of the pulse rate by from 30 to 70 beats a minute, while by its remarkable influence on so many functions it also favors the intestinal activities, as well as increasing diuresis. Whether the pituitary gland contains a principle that exerts an effect opposite to that of the thyroid gland (an antihormone) has not been established; still he is convinced that, clinically at least, pituitary therapy is as profitable an advance in the treatment of hyperthyroidism as is any measure suggested in the past ten years, and deserves much wider application and study in practice. He believes the most fertile field for toxæmia is the intestinal canal, and he as a routine treatment does not give purges by the mouth, but gives a series of oil enemata on three successive evenings. The consists of 5 or 6 ounces of any oil (cotton-seed, olive or almond) warmed to body temperature and injected with ordinary bulb syringe, being made by position and gravity to reach the large intestine. This injection is to be retained all night. If laxatives are prescribed, they must be of the gentlest-acting nature. To neutralize the alimentary toxæmia he directs the drinking in 24 hours of at least three pints of water in which from 60 to 100 grains of sodium bicarbonate is dissolved, not drinking any within one hour before or three hours after meals. He frequently, too, gives about 30 grains of the combined sulphocarbolates a day. He calls attention to localized infections as a cause, and these should, of course, be attended to. The emotions and diet should be considered, and he believes 15 or more grains of pancreatin daily to be a useful adjuvant to treatment. He recommends also the treatment of Dr. Geo. Richter, which consists in the daily dose of 15 to 30 grains of the desiccated anterior lobe of the pituitary body. From an experience of this in 11 cases, he is convinced it is of value.

BOOK REVIEWS

An Index of Differential Diagnosis of Main Symptoms. By various writers. Edited by Herbert French, M.A., M.D., Oxon., F.R.C.P., London. Physician Pathologist and Lecturer, Guy's Hospital; Consulting Physician to the Radium Institute. Second edition. With 37 colored plates and over 300 illustrations in the text. William Wood & Company, New York, 1917. Price, \$10.00.

Inspection of the volume shows the contents to be of unusual attractiveness. The diagnostic side of the entire field of medicine and surgery is covered, and the material is so arranged that the facts are easily obtained. The colored plates are of extraordinary excellence, and the black and white illustrations are noteworthy in that they not only render the text graphic but because they are not mere reproductions of those found in practically all texts on diagnosis. The book is well written, in clear and concise English, and would be a dependable addition to the physician's working library.

C. L. C.

A Handbook of Practical Treatment by Many Writers. Edited by John H. Musser and Thos. C. Kelley, Philadelphia. W. B. Saunders Co., Philadelphia and London, 1917.

In 1912 there were published three volumes bearing this title. The present volume is issued to supplement the others by presenting the advances in treatment since 1912. Except where they have been removed by death the writers of the original volumes have revised their own articles. In placing a value upon this new volume two statements are necessary. First the work itself is of the highest character. A glance at the names in the list of contributors assures the reader of the very best. The revision in the new volume is thorough. Secondly one feels inclined to express his appreciation of the efforts of the publishers to thus add to the value of the first three volumes. One will feel more like purchasing such books if he feels that the publishers will bring it up to date by such a new volume rather than by the issue of an entire new set at so early a date. Medical books grow old so rapidly that one does not feel like buying such systems unless some such method of revision as the one under discussion is employed. H. C. K.

Transactions of the College of Physicians of Philadelphia. Third series. Vol. 38-1916.

This is the yearly volume published by the Philadelphia College and contains, beside some reports, papers read before the society during the current year. The papers are well worth reading and the volume is evidence of the healthy state of the Philadelphia society. H. C. K.

ACKNOWLEDGMENTS

Collected Papers of The Mayo Clinic, Rochester, Minn. Edited by Mrs. M. H. Mellish. Vol. VIII, 1916. W. B. Saunders Company, Philadelphia. Price, \$6.50 net.

Physician Exercises for Invalids and Convalescents. By Edward H. Ochser, B. S., F. A. C. S., President, Illinois State Charities Commission; attending surgeon, Augustana Hospital, Chicago. Illustrated, C. V. Mosby Company, St. Louis, 1917. Price, 75c.

Roentgen Technic (Diagnostic). By Norman C. Prince, M.D., attending Roentgenologist to the Omaha Free Dental Dispensary for Children; Associate Roentgenologist to the Douglas County Hospital, Bishop Clarkson Memorial Hospital, Swedish Immanuel Hospital, St. Joseph's Hospital, and Ford Hospital, Omaha, Nebr. Seventy-one original illustrations. C. V. Mosby Company, St. Louis, 1917. Price, \$2.00.

The Surgical Clinics of Chicago. Vol. 1, No. III, octavo of 231 pages. Seventy illustrations. W. B. Saunders Company, Philadelphia (June, 1917). Published bi-monthly. Price per year, \$10.00.

Department of Health; City of New York, Special Investigation of Poliomyelitis, 1916. Report of committee appointed by the Mayor to co-operate with the Department of Health.

The Practical Medicine Series, comprising 10 volumes on the year's progress in medicine and surgery. Under the general editorial charge of Charles L. Mix, A. M., M. D., professor of Physical Diagnosis in the Northwestern University Medical School. Vol. III, the Eye, Ear, Nose and Throat. Edited by Casey A. Wood, C. M., M. D. D. C. L.; Albert H. Andrews, M. D.; George E. Shambaugh, M. D. Series, 1917. The Year Book Publishers, Chicago, 1917. Price, \$1.50.

Hospital of the Protestant Episcopal Church. Medical and Surgical Reports of the Episcopal Hospital. Volume IV. Wm. J. Dorman, Philadelphia, 1916.

MEDICAL NEWS

Entertainment of Alumni of the Western Reserve.—One of the pleasant features of the meeting of the American Medical Association in New York for the alumni of Western Reserve was the dinner given under the auspices of the Alumni Association at the Hotel McAlpin on the evening of Wednesday, June 6th. Those present included Dr. and Mrs. Charles Goodman, of New York City; Dr. George D. Henderson, of Holyoke, Mass.; Prof. Torald Sollmann, Dr. Clyde L. Cummer, Dr. Edward Peterka, Dr. E. Klaus, Dr. Vernon C. Rowland, Dr. David A. Prendergast, all of Cleveland; Dr. H. M. Schuffell, of Canton, Ohio; Dr. and Mrs. Charles H. Cushing, of Elyria, Ohio; Dr. Edmonde D. Neer, of Sherman, Texas; Dr. J. G. Brody, of Youngstown, Ohio; Dr. C. Burns Craig, of New York City; Dr. Edward Remy, of Mansfield, Ohio; Dr. and Mrs. L. L. Gillett, of Suffern, New York; Dr. O. S. Strauss, of Beaver, Pa.; and Dr. C. Y. Thompson. Prof. Sollmann was asked to describe the present condition of the school and its prospects. The arrangements were in charge of Dr. C. Burns Craig. It was the unanimous opinion of those present that the meetings of this sort during the sessions of the A. M. A. were both enjoyable and of service.

Exaggerate Losses of Doctors in War—British Medical Casualties on Western Front Total 964 Since the War Begun. (Quoted from the New York Times, July 3, 1917.)—Many various and extravagant figures have been published of the casualties in the Medical Service of the British Army. To obtain authoritative information in regard to these figures Dr. Robert H. Halsey of this city, who is a captain in the Medical Reserve Corps, wrote to Colonel T. H. Goodwin of the British Army Medical Service, who has been at the Western front since the war began until very recently, when he was detailed with the British Commission to the United States. Colonel Goodwin thereupon cabled to the British War office and obtained the following information, which was transmitted to Dr. Halsey yesterday:

The total casualties among medical officers of the British forces on the Western front from the commencement of the war until June 25, 1917, were: Killed, 195; died of sickness, 62; wounded, 707, making a total of 964. The total battle casualties, therefore, were 964, less 62, or 902.

From these figures it is seen that only about 20 per cent of the injured die. For the information of the members of the medical profession who contemplate "doing their bit" these figures show the same relation between killed and injured, as in our own estimated battle casualties as given in the "Medical Service in Campaign," by Straub.

Commenting on the exaggerated reports of losses in the British Medical Service, *The New York Medical Journal* says:

"Theoretically the military surgeon is a noncombatant, and, therefore, is in no danger. Practically, this is far from being the case. The reports, however, of the high mortality among the medical staff of the British Army which have received currency in the lay press and credence among medical men are grossly exaggerated. A Washington newspaper recently published the statement:

"Colonel Goodwin says that over 6,000 officers have been lost in this war, by the Royal Army Medical Corps. In his recent address to the graduating class of the Cornell University Medical School Colonel Goodwin quoted this statement in order to specifically deny it. He said: "This is totally untrue. Our total medical force is only 12,000. * * * During three months last years 53 medical officers were killed and 185 wounded. These figures will give you an idea of the casualties among our medical officers."

"It is most fortunate that we have a correction of these exaggerated statement from so competent an authority as Colonel Goodwin, who, as a

member of the Royal Army Medical Corps, has spent the last three years at the front, and who is a member of the British Commission to the United States. Colonel Goodwin is a Companion of the Order of St. Michael and St. George, and has won the Distinguished Service Order, and his statements may be taken as authoritative."

CORRECTION

In the article entitled "Communicable Diseases," published by the Division of Health of Cleveland in the July, 1917, issue of the Journal, it is desired by the Division of Health that the following additions and changes be made:

I. To text—

- (a) Page 472, second paragraph, for "well back in nose" substitute "the naso-pharynx."
- (b) Page 473, add to list of reportable diseases, Diarrhoeas, Infectious. (Dysentery, Amebic and Bacillary). Trichinosis.
- (c) Page 475, first paragraph, add to list of diseases from which books and the like may not be removed from house "infantile paralysis."
- (d) Page 475, last paragraph, third sentence, drop the words "cerebro-spinal meningitis" and add after the word "diphtheria" in the same phrase, "and from the naso-pharynx of those exposed to cerebro-spinal meningitis."
- (e) Page 478, last line, omit words "in writing."
- (f) Page 480, in first part of last sentence of text insert "and" between "scarlet fever" and "cerebro-spinal meningitis" and omit "diphtheria."

II. To table—

(a) Change notes

- (1) Note 19, change "well back in nose" to "the naso-pharynx."
- (2) Note 26, make note read "are taken from throat and nose."
- (3) Add the following notes:
 - (39) If the patient dies or is removed from home during the acute attack.
 - (40) If other conditions make it desirable.

(b) References to notes should be corrected to read—

Under heading "Release from Quarantine," "Patient,"

Cerebro-spinal Meningitis	}	27-29 or 40-28
Scarlet Fever		
Diphtheria	}	27-29
Mumps		

Under heading, "Disinfection," "After Recovery,"

Cerebro-spinal Meningitis	}	29 or 39-40-28
Scarlet Fever		
Diphtheria	}	29
Measles		
German Measles		
Whooping Cough		
Chicken Pox		
Mumps		

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WHAT SHOULD THE PRACTITIONER KNOW ABOUT THE WASSERMANN REACTION

BY ARTHUR A. EISENBERG, M. D.

Resident Pathologist, St. Vincent's Charity Hospital; Visiting Pathologist, St. John's Hospital; Demonstrator in Pathology, School of Medicine, Western Reserve University.

CLEVELAND

It may be well to spend a few moments in recalling the principles upon which the Wassermann reaction is based in order that the subsequent discussion of its application to the diagnosis and treatment of syphilis may be quite fully appreciated—its value as well as its limitations.

The latter, in particular, have not in my opinion been sufficiently dwelt upon, and the lack of such knowledge has led both to the undeserved criticism of the test and to its over-estimation. In a way, the general attitude of the serologists is to be blamed for it: in their praiseworthy fear of overpopularizing what is essentially a highly specialized branch of serology to the extent of creating an impression that the Wassermann reaction may be done and interpreted by any one, just as a simple urine examination—they have overlooked the fact that the men who employ the serologists are not only entitled to, but must know certain phenomena of serology in general, and of the Wassermann test in particular in order not only to employ the test intelligently, but to put, so far as possible, an end to the confusion which unfortunately now exists in the minds of physicians both as to the value and the limitations of the test—for example, how many physicians know that the intensity of the reaction (as expressed in the serological reports by the various signs of + + + +, + +, + —, —, etc.) does not

*Read as part of the Symposium on Syphilis, before the Cleveland Academy of Medicine, March 16, 1917.

bear any relation whatever to the severity of infection, some of the latent—the most symptomless—cases, causing no obvious troubles, are the cases which quite frequently give the strongest positive reactions? How many know why it is that a specimen of blood examined today by A may be + + + +, and if examined at some other time by B may be only + or + — or even negative, and that this difference in the report is due not to the better skill on the part of one or the other man, but to the occasional normal fluctuation of the antibody content of the patient's blood serum? How many physicians realize that not only a single negative test, but even several repeated negative tests do not exclude syphilis but merely point to the involvement of the cerebro-spinal system—which, according to Wile, occurs in about 30 per cent of all cases of syphilis—and that in such cases the blood is almost invariably negative while the cerebro-spinal fluid almost invariably positive? Yet these and similar practical points are of the greatest importance to the practitioner, but as a rule, are inaccessible to him because of being bound together with a mass of highly technical material.

Until now the serologists have been contented with what some one has aptly called the attitude of the "Delphian oracle," expressing the results of the test in some hieroglyphic manner, without mentioning any of the many qualifications that should be known to the physician who wished the test made, on the assumption that if he—the physician—wanted to know anything more than that his patient's blood or cerebro-spinal fluid was minus, plus minus, or three plus, as the case may be, he will "call up and talk it over" forgetting that the unsuspecting physician may not know enough of the many factors affecting the reading of the test, to ask any questions.

Another result of this lack of Wassermann education is a doubly sad indiscriminate use of Wassermann reaction because some physicians do not use the test enough while others resort to it not because of any suggestive history symptoms or signs, but merely as a "blind guess," because nothing else can be thought of; now I do not mean to say that the too frequent use of the Wassermann test is undesirable—the test is of such value that it cannot be resorted to too frequently—in fact it would be of the greatest value to have every patient subjected to it, much in the same manner as we examine every patient's urine, regardless of the nature of his or her complaint; the only trouble is that many physicians who without having exhausted all means of diagnosing the patient's illness resort

to the Wassermann test in a blind, groping hope of "hitting it" will be so disappointed if the report is negative, and so pleased with their resourcefulness in having asked for the test, if the latter is positive that they will forget three facts—first, that a single negative test is absolutely of no value; second, that a single positive test—no matter how strongly positive—is in the absence of all signs, symptoms or history not conclusive, because in a small number of cases we do get a false positive reaction, and third, that a positive test when repeated, means that the patient is luetic, but does not mean that the particular complaint which had brought the patient to consult the physician or that the lesion discovered by the latter is due to syphilis.

An opinion has been expressed that along with an untold benefit which has accrued to the sciences of diagnosis and therapeutics from the development and accessibility of the modern laboratory, there has also been observed, in some ways, a deterioration of the clinical and physical diagnosis in general; a tendency has been noted at times, to rely on the laboratory almost to the exclusion of all other methods of diagnosis. That there is a grain of truth in such assertion seems certain, and that the Wassermann reaction has been no exception can be ascertained from the study of the ratio of positive Wassermann tests to the total number of cases sent to various Board of Health laboratories—in the hospitals and private laboratories, this ratio is, of course, higher, both because of better training of physicians who ask for the test, and because of the expense to the patient.

Christiani has aptly said: "There is a type of physician who with scarcely a glance at the patient rushes to the nearest laboratories, believing that the accuracy of the test is directly as the distance between the physician and the patient and inversely as the time spent at the bedside."

For these reasons it seems justifiable to attempt, within the space of a short magazine article, to gather such facts—well established and safely out of the zone of polemics and controversies—as will be of use to the physician and surgeon in enabling him to get a definite value on the Wassermann reaction.

The practitioner should first of all understand the theoretical considerations upon which all complement fixation tests are based—whether the test be for syphilis, gonorrhea, glanders or tuberculosis.

When bacteria gains entrance into the animal body they, as a rule, cause the latter to respond to such bacterial invasion by the production of antibodies; for our purposes such bacteria are called antigens, and such antibodies are designated as amboceptors; but whatever the destructive action the amboceptors may exert upon the antigen it would not take place were it not for the third substance which is necessary for the interaction—this substance, known as complement, is present in the blood of all animals, normal as well as infected (immunized), does not increase with immunization, and is not specific, i. e., it will do whatever it does with gonorrheal antigen and amboceptor, as well as with syphilitic or tuberculous, etc.

Just what the complement does in order to permit the amboceptor to act upon the antigen, is not known; the natural supposition was that the complement sensitizes the bacteria to an easier destruction by the amboceptor, not unlike do the opsonins, hence the French school referred to it as “substance sensibilisatrice,” but we know that, in vitro, such interaction between the antigen and the amboceptor will not take place unless the complement is present; graphically one may represent this somewhat as follows:

ANTIGEN—{AMBOCEPTOR}—COMPLEMENT

Thus, when the amboceptor fixes the antigen, on the one hand, and the complement on the other (hence the name “amboceptor”—“taking both”), the interaction takes place and the complement becomes fixed by the amboceptor.

In the complement fixation tests we, therefore, wish to determine whether the patient's blood serum can, in the presence of the antigen, fix the complement, which is equivalent to saying that we wish to see whether it contains the antibodies (the amboceptors), since the antigen alone cannot fix the complement. In order to take a concrete example, let us consider complement fixation test for gonorrhea.

If we mix in a test tube certain amounts of the antigen (gonococcus emulsion), complement* (usually in the form of a guinea-pig's serum) and the patient's serum,* one of two things may happen: If the patient is infected with gonorrhea, his blood serum contains the specific amboceptor (antibodies), which together with the antigen, will fix the complement.

*The question is usually asked: “Why add complement when the patient's serum already contains it?” The answer is, that we destroy the unmeasured complement in the patient's serum by heating, in order to use a measured amount of complement later.

If the patient is not infected, the complement will not be fixed, since there are no amboceptors, and the antigen alone cannot do this.

Other complement fixation tests are made exactly in the same manner, except, of course, that different antigens, specific for each case, are used, i. e., emulsions of bacillus mallei (for glanders) b. tuberculosis, etc.

But how can we show, in vitro, the fixation of complement? The reaction is colorless, neither is there any other visible change. The following is, therefore, taken advantage of: If the red blood cells of animal A be repeatedly injected into animal B, the serum of the latter will acquire the property of destroying the red blood cells of A—this destruction consisting in hemolysis; in other words, the serum of B now contains hemolytic amboceptor which, acting on red blood cells of A in conjunction with the complement, of course, causes the hemolysis of the latter; this variety of complement fixation—hemolysis—unlike the previously described fixation, is accompanied by a visible change, namely when hemolysis takes place, the contents of the test tube which at first were opaque and pinkish become quite clear and reddish; if there is no complement available, so that the hemolytic serum cannot act on the red blood cells, the tube remains opaque and clumps of red blood cells settle on the bottom.

Now the technique of the complement fixation test is as follows: We mix in a test tube certain measured amounts of patient's serum (heated in order to destroy the normally present unmeasured complement, and which may or may not contain the antibodies—amboceptor, according to whether the patient is or is not infected), a guinea pig's serum (for the purpose of furnishing the necessary complement), and the antigen (i. e., the substance which causes the infection).

The tube is incubated for at least 30 minutes for the purpose of allowing the three ingredients to act upon each other, then the red blood cells of animal A and the serum of animal B (immunized to the red blood cells of A) are added to the tube, and the whole is again incubated. If the patient is infected, his blood serum contains the amboceptor; this together with the antigen will then fix the complement during the first incubation; now, when we add the second—hemolytic—combination of antigen (red blood cells) and amboceptor (serum of animal immunized to these cells), the combination has no available complement (which has just been fixed

in the first incubation), and hemolysis, therefore, does not take place, the contents of the tube remaining opaque and the red blood cells settling in clumps on the bottom of the tubes.

On the other hand, if the patient is not infected and his serum, therefore, does not contain the amboceptor, then the complement remains free in the first incubation (since the antigen alone cannot fix it), and is available to the combination of the red blood cells of animal A and the serum of the animal B (immunized to these red blood cells), and the hemolysis there takes place, the contents of the test tube becomes clear and assumes a reddish color. In other words, the entire test is a struggle over the complement.

These steps of the reaction hold perfectly good for all other complement fixation tests, except, as has been mentioned above, that the specific antigen (the bacterial emulsion) varies according to the kind of infection.

Unfortunately, everything is not quite so simple in the case of that complement fixation test in which we are particularly interested, viz.: the Wassermann reaction. When Wassermann, Neisser and Bruck applied the Gengou phenomenon—the complement fixation—to the diagnosis of syphilis it was naturally assumed that some preparation of the *spirochaeta pallida* had to be used as antigen—just as we use gonococcus preparation for the test in gonorrhea, *b. mallei* for that in glanders, etc. But in those days the successful cultivation of the *spirochaeta pallida*—so brilliantly accomplished since by Noguchi—was still a “*pium desiderium*,” and thus the liver of a syphilitic foetus was used because of its richness in *spirochaeta pallida*. But very disturbing reports soon began to appear in the literature, namely, that there were substances other than the syphilitic liver, which could be used as antigen just as successfully, and even more so. These substances—horribile dictu—had apparently nothing to do with syphilis, among them being normal human heart, beef heart, guinea pig heart, etc. “Old shoes, if well greased, can be used, too, can’t they?” sneered the Old Guard who preferred the therapeutic to the diagnostic test. “Yes,” hopefully replied the iconoclasts who were just beginning to see the light, “old shoes, too, can be used, but don’t forget to grease them,” for they had noticed that all the substances recommended to be used as antigens had one thing in common—they were rich in lipoids—“the fat-like bodies,” such as lecithin, and, especially, cholesterolin. A suspicion then crept in that the syphilitic liver was a good antigen not because of its spirochaetal content, but because of the lipoids

present; this lurking suspicion became a scintillating truth when after Noguchi had succeeded in growing the *spirochaeta pallida* in pure culture, the latter was tried as antigen: alas! the "specific" antigen was a flat failure, giving positive results but in 40 per cent of clinically positive cases.

So there we were—an apparently specific reaction—giving over 90 per cent of positive results in syphilitic cases, and practically none in non-syphilitic cases, and yet the specific antigen could not be compared in its efficacy with the non-specific antigen, which in addition, widely differed from each other, but for one unifying feature—the lipoid content!

There was but a step to the next logical deduction, which is now accepted as an axiom: The Wassermann reaction is not a true antigen—antibody reaction, but a reaction between lipoids in the antigen and lipotropic bodies in the blood serum or the spinal fluid of syphilitics—in other words the reaction is specific biochemically rather than biologically.

But does the character of the reaction make any difference clinically? After all, these interesting stages of evolution of our conception of the exact nature of the reaction are important only because of their bearing to clinical medicine—"nihil bonum est nisi vitae humanitateque securret." Fortunately, it is firmly established that regardless of the nature of the reaction its clinical value is just as great as if we understood its finer working—it remains a glorious example of the value of theory applied to practical use. But if the nature of the test—or rather the lack of its understanding—has not robbed it of clinical value, it has created a necessity for certain precautions and made it imperative for the practitioner to ever bear them in mind in order to intelligently understand the many "so-called paradoxical phenomena," which are encountered by all those who either perform the test or resort to it.

The first question to consider is why there are the so-called false negative and positive reaction? It is generally accepted that a single negative test has absolutely no value, especially when there is a suspicion of the existence of the disease, chiefly because the following facts must be borne in mind:

(a) The daily variation of the amboceptor content of the patient's blood serum; for some unknown reason the lipotropic substances which together with the lipoids of the antigen fix the com-

plement, may be present in either larger or smaller amounts on one day than on another—thus, the serum which gives a $++$ reaction today, may give $+$ or even $+$ — on the next day.

(b) The effects of alcohol is another factor which is not generally known to the practitioner. Ingestion of six to eight ounces of whiskey or that of one to two pints of beer often converts a positive test into a negative one, and this may last as long as three or four days, although twenty-four hours is the average duration. Smaller amounts of whiskey or beer will do damage in proportion to the amounts ingested, i. e., they will render a $++$ reaction a $+$ or even $+$ —, etc. Yet it is not the absolute amount of alcohol itself that is responsible for this change, for were even the entire amount of serum used in the test replaced by alcohol it would be insufficient to hemolyse the amount of red cells used (i. e., to give a negative reaction); it must, therefore, be its effects on the lipotropic substances which fix the complement.

(c) If the patient's serum be contaminated with certain strains of either staphylococcus or streptococcus (not all strains will do this) a false positive reaction may take place. This is quite possible when the serum has to be kept for a long time before it is used for the test, as may be the case when it is sent away to some "mail order" laboratory.

(d) Where specific antigen is used (i. e., either pure cultures of *spirochaeta pallida*, or syphilitic organs containing them) and a positive test is obtained, the possibility of this being a group reaction (similar to group agglutination of the various members of the typhoid colon group) must be borne in mind, for if—as we know—*spirochaetae* other than the *pallida* such as *S. microdentium*, *S. refringens* and *S. pertenuis* give occasionally a positive reaction with the syphilitic serum, it is possible that a patient infected with any of the above (the former two being frequently present in normal individuals) may give a positive reaction with this *pallida* used as antigen, and yet be free of syphilis.

(e) The ether or chloroform anesthesia will cause a positive reaction which may persist for 24 to 48 hours; a patient is operated on, a lesion suggestive of syphilis may be noticed; a Wassermann test is ordered, it is reported positive; yet a few days later, another specimen of blood is sent to another laboratory, the test is reported negative, yet both tests were performed properly.

It is easy to see from the above why different laboratories occasionally report different results of the tests performed upon the different samples of the blood of the same patient.

The most important factor in this connection, however, is the variation of technique; there are two standard methods: the original Wassermann method and the Noguchi modification; of the two the latter I believe, is much more correct, and for this reason:

In the original Wassermann test sheep's red blood cells are used, while in the Noguchi modification we use the human red blood cells, to immunize the rabbit.

The human blood serum, very frequently, contains substances which hemolyse sheep's red blood cells, as was first observed by Noguchi. In a paper soon to be published, I call attention to the fact that this is even much more frequently the case than Noguchi's observation had led him to believe; in the work done with the assistance of Dr. N. C. Ice, while performing the Wassermann tests upon hundreds of children, we found that over 75 per cent of sera contained some antish sheep hemolysin. Now let us see what happens when patient's blood serum contains such antish sheep hemolysis: if the patient is not infected with syphilis, so that upon mixing the patient's serum, the complement (guinea pig's serum) and the antigen, the complement remains unfixed, then, upon the addition of the rabbit's serum and sheep's red blood cells hemolysis will take place, as usual; if the patient is infected, and his serum contains syphilitic amboceptor, in sufficient amount to fix ALL complement no hemolysis will take place, as usual; but if the infection is slight, and the patient's serum contains only enough syphilitic amboceptor to fix a part of the complement, then some of the complement would be available for the combination of rabbit's serum and the sheep's red blood cells; now we have in the test tube not only the antish sheep amboceptor furnished by the rabbit's serum, but also that furnished by the patient's serum—we know that the more amboceptor we have the less complement we need—the dose of the antigen (in this case the sheep's red blood cells) being the same; therefore, having an excess of hemolytic amboceptor, the small amount of complement present (i. e., that part which had not been fixed by the syphilitic amboceptor and antigen during the first incubation) will cause a complete hemolysis of the sheep's red blood cells, and we will thus obtain a false and misleading negative reaction; it is estimated that

the Noguchi method gives from 10 to 20 per cent more positive reactions, because it uses human red blood cells against which the human serum normally contains no amboceptor.

Why so many laboratories still cling to the original method is a mystery to me; creating such inconveniences as the necessity of obtaining the sheep's blood, requiring large amounts of blood which necessitate going into the vein, the original Wassermann method is less accurate, "missing" quite a number of positive cases; the several methods proposed for the removal of natural antisheep amboceptors present in normal blood are, at best, time consuming and after this time has been spent they offer absolutely nothing in return.

Thus in the difference between the two methods we have another reason for the frequent discrepancy in the reports from different laboratories.

A parting word before I leave the general consideration of the "why and wherefore" of occasionally false negative and positive reactions: The test is extremely delicate and, therefore, the least error—sometimes unavoidable in new man hands—being sufficient to render the test void, therefore, the best man will occasionally "go wrong;" for example, an overzealous helper around the laboratory will become imbued with a worthy ambition to clean the pipettes extra well, and instead of rinsing them in water, will wash them in soapsuds. This is sufficient to render the subsequent tests negative for weeks, the soap being extremely hemolytic, as are many other substances. Therefore, when you are quite sure that the patient "must have lues," and the serologist is quite sure that the test is negative, do not think that the request on the part of the latter for another test, is an admission of poor technique or of the unreliability of the test—it is merely the proper thing to do under the circumstances.

Remember, especially, that since, according to Udo Wile, about a third of all cases of syphilis develop the cerebrospinal form of the affection, even repeated negative tests on the blood serum not only do not exclude the existence of the infection but actually point to the necessity of examining the cerebrospinal fluid—no one should be pronounced free of syphilis unless both the blood and the spinal fluid have been examined—in the cerebrospinal lues the blood is in a great majority of cases negative while the cerebrospinal fluid is invariably positive.

The most important point in the differential laboratory diagnosis between the cerebrospinal lues and paresis is the fact that in the

latter both the blood and the fluid tests are positive, while in the former the fluid alone is positive. Why should the blood be negative in the cerebrospinal lues? One explanation is that because of the swollen congested lining of the narrow bony canals and recesses of the interior of the skull, the antibodies (i. e., the lipotropic substances) cannot go freely into the circulation but remain dammed back. The other explanation—the more probable one—that there is a special strain of the *spirochaeta pallida* which attacks the cerebrospinal system and is present in the cerebrospinal fluid only.

Another fruitful source of overestimation and misunderstanding of the Wassermann test is the fact which I have mentioned above that so many physicians forget that a positive test means the presence of lues but does not mean that the particular symptoms manifested by the patient are due to it. I remember a patient with a laryngeal ulcer which was diagnosed as syphilitic because of a positive Wassermann reaction; an intensive antiluetic treatment, however, had no effect and a microscopical examination of a piece of tissue added to the general embarrassment of all concerned (including the patient) by revealing an extensive carcinoma; while this absolved the antiluetic treatment of the charge of the conduct unbecoming all things antiluetic, yet it created a situation so unpleasant for the serologist that he was inclined to amend the ancient adage about the prophets being without honor by adding that the honor (of being a serologist) is also without profit. The angry clinician summarily consigned the entire realm of serology and all those who worship at its shrine to the region where the incubation temperature is understood to be considerably higher than 37.5 C. and the incubation period is rather indefinite. However, the autopsy revealed the *raison d'être* of the positive Wassermann in typical gummata of the liver thus exonerating the Wassermann test from all malice aforethought.

Still another common source of misunderstanding between the clinician and the serologist are those cases which are under treatment and are sent to the laboratory for "checking up." I know of no quicker, surer and all around more satisfactory way of arousing the ire of a physician referring a case than telling him that the serum which gave a + + + + reaction six months ago, is just as positive today, after all this treatment. He takes that as a personal affront, a reflection upon his skill as a healer, and immediately wants

to know what kind of a test is the Wassermann test. Yet in a case of this kind the fault rests entirely with the serologist; here is what happens:

In the case above mentioned it looks as if the patient has not derived any benefit from the treatment, as the record would show, that June 1, 1916, + + + +, December 1, 1916, + + + +. But the Wassermann reaction is a strictly quantitative test; we ordinarily (in the Noguchi Wassermann test) use 0.1 c.c. patient's serum, now if at the time of the first examination, not only 0.1 c.c. of serum, but also smaller quantities had been examined, e. g., 0.07, 0.05, 0.03, 0.02, 0.01, etc., then probably we would have found that some of these quantities were not quite as positive, the last one in two might even be negative; if the same thing were done at the time of the second examination, it would have shown that while 0.1 c.c. of serum is just as positive as it was six months ago, yet the reaction is negative in some smaller quantities where it was positive before—in other words, after the treatment, larger amounts of the serum are necessary to give a positive reaction, because there are fewer antibodies present in the circulatory blood, so that if a "titration Wassermann" had been performed both before and after the treatment, the results would look somewhat as follows:

				Before Treatment	After Treatment
Quantity of serum used	0.1	c.c.	.....	+ +	+ +
"	"	"	0.07 c.c.	+ +	+ +
"	"	"	0.05 c.c.	+ +	+
"	"	"	0.03 c.c.	+ +	+ —
"	"	"	0.02 c.c.	+ +	—
"	"	"	0.01 c.c.	+	—
"	"	"	0.007 c.c.	+ —	—
"	"	"	0.005 c.c.	—	—

In other words, we have, in this instance, a situation where if only an ordinary examination (that is, using but one standard-quantity of the blood serum) were made after the treatment, the results would be wrong all around—the patient would be discouraged and his physician disgusted; yet a material improvement had taken place, for, looking at the above table, we see that 0.05 c.c. serum was + + before the treatment, while now it is only +; 0.03 c.c. was + +, now + —, finally, 0.02 c.c. was + +, while now it is entirely

negative, showing that the substances which are the gauge of the severity of the infection (i. e., the amboceptors) are less numerous.

Then we see how tremendously important the value of this "titration Wassermann" is; it should be done in every case before, during and after the treatment; how many practitioners insist upon it?

One more point and I will desist. The serologist—just like any other worker—may be inclined to keep the records of his work and, not wishing to be merely a Wassermann turning machine, may want to learn something about the test by studying the histories of the cases—for not only *docendo dicimur*, but also *laborando*. For this reason he may be bold enough at times, to ask the physician for some information in addition to the usual enlightening remarks, such as: "Male, colored, has a toothache and drinks much gin," or "female, white, constipated, dysmenorrhea." As a rule these strikingly original and startlingly complete post-scripta on the back of a grocer's or druggist's bill, wrapped around the tube containing the blood—brimming as they are with information, do not mean much to me, valuable as they are both phylo- and gyne-genetically; I want to know whether or not the patient ever had any symptoms of syphilis other than being both male and colored—a very strong predisposing etiological complex, to be sure; whether or not any treatment other than two injections of gray oil (together with an advice to have another one, and to chew the food carefully) had been given, by the second year medical student, most of the oil being freely and generously given into the surrounding air in the attempt "to expel the air from the syringe in order to guard against the air embolism," thus converting an ounce of cure into a pound of prevention, and the injection taking on the form of inhalation; whether or not Wassermann tests had been previously made; their results and the methods used.

As a rule these idle and curious—not to say irrelevant—questions never fail to arouse the physician's ire: "Don't you want me to tell you whether or not he has syphilis?" The bright question often asked by one who is clever enough to see at once that either the serology, or the serologist, or both are frauds, and then the test is referred to a laboratory where "Wassermann tests are made and no questions asked." I am not trying to be facetious, but it is a sad state of affairs—the clinician who insists on having a complete history of a case before he makes his physical examination—

certainly before making his final diagnosis, denies the very same information to the laboratory man in order "not to bias him."

In the light of the above remarks upon the various factors affecting the Wassermann test it is apparent that what differentiates a serologist from a "Wassermann-maker" is just the ability of interpreting the results of the test in the light of the patient's condition.

Résumé

1. Do not hesitate to give the serologist as complete a history of the case as possible, when sending the blood for Wassermann test—you want it for the physical examination, he should have it for the Wassermann test.

2. Insist—when a treated case is referred—to have the laboratory do the "titration" test—it will prevent much disappointment.

3. Tell the patient to leave the whiskey and beer severely alone for 48 hours before the blood is taken for the examination.

4. I believe the Noguchi modification is a much more delicate test, giving at least 15-20 per cent more positive results in syphilitic cases.

5. Not only a single negative test on the blood, but even when repeated—does not exclude the lues—we may be dealing with cerebro-spinal syphilis in which the blood is, in a great majority of cases, negative. No one should be pronounced free of syphilis until both the blood and the cerebro-spinal fluid have been examined.

6. Repeated positive test almost always means infection, but remember that there is such a thing as a false positive test.

7. Remember that some bloods and cerebro-spinal fluids, especially the cases of the vascular and cerebro-spinal lues are "Wassermann-proof" (Wassermann-fast).

8. At least two antigens should be used in doing the test—personally I prefer the acetone-insoluble lipoids (Noguchi Antigen) and the cholesterinized heart (Sachs antigen). The latter is extremely sensitive, so that it is of the greatest value when negative—as it absolutely excludes the infection.

Charity Hospital, Cleveland.

“THE PROPHYLAXIS OF VENEREAL DISEASE IN THE ARMY”

BY H. N. COLE, M. D.

Associate in Dermatology and Syphilis, Western Reserve University.

Before the beginning of the Great War 25.3 per cent of the constantly sick in the English army were suffering from venereal disease¹, an average of two days for each man. Cottle says² that 2.25 per cent of the United States army is syphilised each year. War times raise the quotas and it has been said that 50 per cent more of the Canadians have been rendered “hors de combat” in London than in the first line trenches from enemy fire. Since Charles the VIII invaded Italy wars have always been the great spreader of lues and we now find syphilis more prevalent in Europe than ever before. Pautrier in 1916 estimated that there were about 200,000 cases of acute syphilis along the French battle line alone. Gaucher reports that at the St. Louis Hospital, in Paris, before the war there were 300 early luetics to 3,000 cases. For the same period in the first months of the war the figures rose to 800 in 5,000 or from 1 in 10 to 1 in 6. In the following eight months the figures rose to 600 in 2,300 or 1 in 4. In other words the disease has increased $66 \frac{2}{3}$ per cent in Paris. It has been reckoned⁵ that up to February, 1915, or less than a year, that the Germans had had 30,000 cases of fresh syphilis in their Belgian army alone. The situation has become so alarming in all the countries that strenuous measures have been instituted to overcome them. The report of the English Royal Commissioner on venereal diseases⁶ has but recently appeared and the French Academy gave out their recommendations over a year ago. A committee composed of Balzar, Beclere, Bourquelot, Grunbert, Hallopeau, Landouzy, Pierre Marie, Pinard, Pouchert, Vaillard and Gaucher felt that the following measures must be taken at once for regulation within the war zone and so reported to the War Department:

1. Surveillance and daily visits to all tolerated houses of prostitution, bi-weekly visits to all registered prostitutes.
2. Visits for sanitary reasons of military authorities every fifteen days.
3. Visits on persons indigenous to a region, on their being called to work in manufactories, at their departure from home and on their return.

4. Absolute prohibition of street soliciting.
5. Rigorous police supervision of public houses.

6. Interdiction of the remaining in war zone of non-indigenous women except with military permit—calling attention of these to dangers of clandestine prostitution.

7. Formation of special hospitals for venereal diseases both for military and civil cases, men and women, with addition of out-patient departments and the immediate formation of special clinics by the Faculty of Medicine for the instruction of military men called to treat venereal diseases.

8. The increase of conferences, already started in the sanitary division and among the troops for their instruction on the dangers of venereal disease and on their treatment.*

These recommendations tend to give the reader a small idea of the enormity of the entire question and to show him how essential it is that the whole scheme must be very carefully worked out and established.

We would consider prophylaxis under several heads somewhat on the same order as Balzar⁵, viz.: the administrative and military, the moral, and educational and the individual prophylactic measures.

The past winter on the Mexican border our regular army in Mexico were allowed supervised prostitutes who lived with the army, who were examined frequently, kept under guard and made as it were a part of the regiment. It is claimed by some army men that this scheme works out very well. The same plan is used to a certain extent by the French, Austrians, Germans and Italians, though to judge from the report of Jolivet⁹ who reports 100 acute cases, the official prostitutes are quite as dangerous as the others, as 52 per cent of the men contracted disease from the supervised women, while 48 per cent were from clandestines, married women, legitimate wives, etc.; there being but one extragenital chancre in the list of 43 luetics. It will rest with our government to decide whether they will allow the same shameful procedure to accompany our sons and brothers to France, but we personally are heartily against it. These same sons and brothers do not require this condition at home and we are of the opinion that it only tends to encourage lower ideals and more vice. We are against supervised prostitution

*See translated circular, at end of article, given out by this committee⁸ through the French Government to every soldier.

in military life the same as in civil life. Riggs¹⁰ at the Norfolk Navy Yard, in a careful statistical study, found that their problem was much simplified by the closing of the Red Light District. We have found the same to be true in Cleveland. We also feel that the prohibition of alcohol¹¹ in the neighborhood of training stations and camps is a piece of administrative prophylaxis of much more value than is generally appreciated and our Secretaries of the Army and Navy are to be greatly commended for this stand. There must also be an absolute prohibition of street solicitation, and in fact careful supervision of all females in the war zone. The British¹ have found that female police help greatly in controlling loose women. Educational work among the women by way of the Y. W. C. A., etc., will also help along this line. Under administrative and military prophylaxis should also be mentioned the enforced hospitalisation of all acute cases of syphilis.* This is absolutely necessary where large bodies of men are living in such close contact to one another, and with syphilis so rampant. A former Lakeside Hospital interne has personally told us that extragenital chancres were very common among the soldiers on the Mexican border. Tullidge¹² says that in France primary and secondary syphilis comprised about 78 per cent of all venereal cases and of these primary extragenital lesions comprised about 60 per cent of all primaries. This is certainly much higher than in civil life where the proportion runs at about 5 per cent. He reports that a thorough examination of two regiments (2,200 men), taken at random, showed primary syphilis starting on every conceivable part of the body and over 60 per cent of these were cases that had not been reported.

As to moral prophylaxis Balzar does not think that it has much value. This is certainly not true of civil life and we believe that the moral and educational side together, if properly used, should have an enormous influence. Thus the English have a regular syllabus⁶ which explains everything thoroughly to the soldiers. May¹ says that 750 lectures to 500,000 soldiers had been given out up to March, 1916. Witness the pamphlet given at the end of this article, which is handed out to every French soldier. In the American army they have tried to some extent the use of posters¹³ and printed conversations on venereal diseases. In our Navy every medical man is required to do a certain amount of lecturing on this subject to the sailors. The French have also tried the use of illustrated

*This will be taken up more in detail in the next number of the *Journal* on "The Treatment of Acute Syphilis in the War Zone."

(lantern slide) lectures, though not as yet on a large scale. This work if done at all must not be measured by the enthusiasm of the individual medical man, which may be "nil." A regular illustrated syllabus should be drawn up and used. We can not dwell too much on the value of the educational movement in relation to venereal disease with both women and men. Riggs has well illustrated statistically what a little enthusiasm has done along this line at the Norfolk station.

And this brings us up to the third part of our prophylactic measures—that in relation to the individual himself. Given a certain individual who has been carefully instructed in the training stations as to the danger of venereal disease and especially of syphilis, are we to stop here or go a step farther and explain means of prevention? Personally we are strongly against it, believing that a man because he is a soldier should act no differently than if he were at home with his family. From the standpoint of national efficiency it perhaps is of some value though there are arguments and statistics both *pro* and *con*. It will undoubtedly influence some men to take the chance who would not do so otherwise and thereby perhaps enough more would be infected to bring the average up to that where no prophylaxis is used. Since 1910 the so-called "Package K," consisting of a tube of 33 per cent Calomel ointment and of a tube of 20 per cent Argyol or some other silver salt has been used in our Navy and somewhat also in our Army. The sailor on returning from leave is obliged to report at the sick bay, if he has been exposed, and he is then given a careful cleansing with soap and water followed by an application of the calomel or Metchnikoff's ointment and by an intraurethral injection of the silver preparation. Some men claim to have had excellent results if used early enough. Riggs thinks it is almost a specific up to 3 or 4 hours—being absolute in the first hour. About 40 per cent of his cases were contracted while under the influence of alcohol and of course these are the men who procrastinate and do not discriminate. Holcomb¹⁴, who was one of the originators in the United States Navy, is now against it morally and also has given figures to show his point. The statistics per thousand are given for the five years before the adoption and the five years following the adoption of the prophylactic treatment:

	Gonorrhoea	Chancroid	Syphilis
1903-1908.....	47.2	12.12	22.03
1909-1914.....	91.9	33.18	23.37

These figures certainly do not look favorable, though others claim to have had much better results. The British commission on venereal disease⁶ have not felt it advisable to mention the prophylactic treatment in their syllabus of instruction, as both of the Secretaries of War and Marine were opposed. Nevertheless, the sailors in the Royal Navy are given the packages when asked for and they are quite generally and quite successfully used by the men.¹⁶ The French Academy get around the point by first advising continence for its moral and physical value and then add, though not advising the act of the deed, "If at any time, *in weakness*, you have allowed yourself to be tempted by these women, etc." Apparently, if the patient is careful to oil his organ with cocoa-butter, lard, grease or olive oil, etc., beforehand, so as to lessen abrasions, and is then careful to cleanse himself thoroughly in one to three hours afterwards with soap and water followed by an intraurethral injection of some silver salt and inunction of the organ with at least a 25 per cent calomel ointment; in such a case it seems the patient is almost free from danger. However, the average case, under such conditions is careless as to time or too intoxicated to care and too often waits until it is too late. The one sure preventive is continence aided by removal as far as possible of all temptations and replacing of them by Y. M. C. A. reading and lounging rooms, games, sports, etc.

In considering prophylaxis of the individual we must remember that we are dealing with a disease that unfortunately does not limit itself to the person affected. What will be the toll of the next generation as a result of this war? Thiebierge¹⁷ very aptly says that "every soldier contracting syphilis now may be considered as representing at the very least one less soldier and one less mother of a family in the years 1936-45. Pautrier on his estimated figure of 200,000 fresh luetics in the French army says that this means at least 400,000 still births in the years to come. And we might add that even if the child did live that a vast proportion of them would be better dead and they would be in such a condition that they would have to be kept by the State.

Summary

Venereal diseases are much more common in war times due to the laxity of morals and mode of life. As much as possible the Government must take stern measures. (1) To remove all alcoholic beverages from the neighborhood of soldiers. (2) Prohibit all street soliciting. (3) Have rigid supervision of all public houses

in army zones. (4) Prohibit the presence of all unessential females from the war zones except when supplied with a military pass. (5) Because of the danger to others from these diseases all such fresh cases should be removed during the danger period to special hospitals in charge of specialists. (6) It should be a required part of every soldier's instruction that he receive an illustrated (lantern slide) syllabus or series of lectures drawn up by the proper officers showing the dangers of venereal diseases to him, to his family and to the State, to show him the value of early diagnosis and treatment in such cases and the dangers of concealment, to show him that the best possible way to keep out of trouble is to avoid it, and to prove to him that professional prostitutes are just as dangerous as any others. Moreover he should be taught that continence is not dangerous but will make him of the most value to his country. If the Government sees fit, instructions in artificial prophylaxis can then be added as in the French instructions following:

"Soldiers, Beware of Venereal Diseases" ⁸

(1) The venereal diseases, especially syphilis and gonorrhoea, gravely affect the health. It is the duty of a good citizen and soldier to conserve his health for the service of his country.

(2) Do not think that sexual continence is harmful. It conserves all the powers to the human body. It is quite apparent that it is the surest way of avoiding venereal disease.

(3) Friend! have a care for a venereal disease may some day be transmitted to your family, to your friends and especially to your wife and children. Do not lose their love, esteem and respect. Should you be honorable with your family? Would you have their love if you infected a sister or daughter?

(4) Beware of all the females who solicit the passerby in the streets. You may well know that they are infected and that you risk contagion through them.

(5) Beware of their kisses, for the mouth of an infected person can give you syphilis, just as well as contact with their sexual organs. Do you know that venereal diseases are much more common now than in times of peace.

(6) If at any time, in weakness, you have allowed yourself to be tempted by those women, do not forget to use a "protector" of rubber (condom).* Also be careful to first oil your penis with some fatty substance, suet, oil or tallow, or, better still, with a disinfect-

*Neisser (*Deutsche med. Wchnschr.*, 1915, No. 3, 61) advised the supplying of condoms to all soldiers in the German Army.

ing ointment containing 30 per cent of calomel. Do not touch either the mouth or sexual parts after the sexual intercourse. Wash the penis and adjacent parts vigorously with soap and water and if it be possible with a solution of bichlorid one to a thousand. It is also best to urinate immediately after intercourse.

(7) If you have a discharge you can be sure that you have a venereal disease and go immediately to the doctor and continue with him until you are cured. He will be your sole confidant and counsellor.

(8) It is also well to know that syphilis can be contracted in other ways than from a female, by contact with objects belonging to a person with syphilis such as cigarettes, pipes, glasses, forks, razors, napkins, handkerchiefs, etc. Beware of contact with persons whom you know to have syphilis, men or women, as well as with objects which they use.

(9) A man affected with a venereal disease should abstain from all sexual intercourse. He should wash his hands after having touched his sexual organs. In case of syphilis one should kiss neither parents or friends. The table utensils and his laundry articles should be used by him alone. Otherwise he risks giving the disease to others and adding to his troubles as well as prejudicing himself to society and his country. If a complaint be lodged against him the judicial procedures will be severe.

(10) In bewaring of prostitutes you guard your health for the girl whom you will marry and for the mother of your children. You may be sure that, thereby, during the war you will keep intact your courage and strength for your country."

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CEREBRO-SPINAL MENINGITIS IN CLEVELAND 1917

BY THE DIVISION OF HEALTH OF CLEVELAND

Cerebro-spinal meningitis has been unusually prevalent in Cleveland during the first seven months of 1917. It reached its maximum in April and has been gradually declining since that time.

In consequence of the peculiar epidemiology of cerebro-spinal meningitis—the relative infrequency of a given case being traced to direct contact with a previous clinical case—sanitarians hold that most people are immune to the disease, but that immunes, when in contact with cases, frequently become carriers and the source of infection to non-immunes. Strict isolation is, therefore, the best safeguard against the spread of the infection, and this isolation should begin with the onset of the disease. In the average home with untrained attendants such isolation is very difficult to secure, while in hospitals it is relatively easy.

The treatment of cerebro-spinal meningitis makes heavy demands upon the expertness and judgment of the physician in attendance, and the cost of anti-meningococcus serum in prolonged cases makes serious inroads upon the purse of families in poor circumstances, and, indeed, even upon those in more easy financial conditions.

If it should appear that the hospital can secure better results in these cases by virtue of more frequent lumbar puncture and freer use of serum, the added security of the city against a wide-spread epidemic of the disease would make it proper for the Division of Health to urge the hospitalization of any case that could not be well isolated and adequately treated in the home.

The number of cases and deaths from cerebro-spinal meningitis in the first seven months of 1917 and in the corresponding months of the five previous years is shown in the following table:

	1917		1912		1913		1914		1915		1916	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
January	3	1	0	0	3	3	4	3	4	1	3	3
February	10	2	1	0	7	7	5	4	4	1	5	1
March	25	16	2	0	14	9	9	4	3	4	9	5
April	35	16	9	0	17	13	13	11	1	1	8	4
May	28	11	3	4	9	10	10	7	2	1	0	1
June	22	8	1	2	2	4	4	3	3	3	6	7
July	8	4	6	4	6	5	5	1	2	0	5	9
	131	58	22	10	58	51	35	29	19	11	36	30

In an attempt to determine the added safety to the patient of hospital treatment, data was secured from the City Hospital of cases treated there, and from private physicians of cases treated in their homes. Clinical data was secured on 134 cases reported as cerebro-spinal meningitis, of which 88 were in the City Hospital, 10 in other hospitals and 36 at home. Twelve of the City Hospital cases and two of the home cases, although reported as cerebro-spinal meningitis, were finally diagnosed as not being meningitis or at least as not of the epidemic type.

The results of treatment are shown in the following table:

	Cases	Deaths	Mortality
City Hospital	76	30	39%
Other hospitals	10	4	40%
At home	34	17	50%

The routine treatment of these cases at the City Hospital, which was taken as the standard, may be stated as follows: A lumbar puncture is done each day—or on alternate days in cases that are improving rapidly—for the first seven to nine days. At the first puncture a relatively small amount of fluid is withdrawn, but on later punctures the fluid is allowed to flow as long as it will, stopping only with the cessation of flow, or when the patient complains of headache or pain. This relatively complete withdrawal of the cerebro-spinal fluid is considered of decided value. Anti-meningococcus serum is given after the puncture unless this shows a spinal fluid clear and under normal pressure. In severer cases the serum has been administered twelve to eighteen times.

It is not always possible to continue the treatment according to routine; several cases have been encountered in which dry taps have resulted after the first few punctures. The ages of the patients, the result, and the number of serums injected are shown in the table below:

YEARS	CITY HOSPITAL CASES					AT HOME CASES				
	Cases	Deaths		Recoveries		Cases	Deaths		Recoveries	
		No.	Serums	No.	Serums		No.	Serums	No.	Serums
Under 1	5	4	26	1	3	5	2	3 ³	3	6 ³
1-4	19	8	38	11	77 ¹	11	5	6 ⁴	6	31 ⁵
5-9	18	7	39	11	81 ¹	8	5	7 ⁴	3	17
10-14	9	2	6	7	55 ¹	6	1	0	5	20 ⁶
15-19	3	2	7	1	13	0	0	0	0	0
20-29	8	1	6	7	35	1	1	0	0	0
30 and over	13	6	30 ¹	7	32 ²	3	3	2 ³	0	0
Not stated	1	0	0	1	9	0	0	0	0	0
Totals	76	30	152 ⁷	46	302 ⁸	34	17	18 ⁹	17	74 ¹⁰

¹For one case, number of serums not stated. ²For two cases, number of serums not stated. ³To one case. ⁴To two cases. ⁵To five cases. ⁶To four cases. ⁷To 29 cases. ⁸To 41 cases. ⁹To six cases. ¹⁰To seven cases.

This table shows clearly the much freer use of anti-meningococcus serum at the City Hospital than in the home, and the lessened mortality at the hospital may fairly be considered as, in part at least, a direct result of the more intensive treatment.

The longer a patient with cerebro-spinal meningitis remains in the home the greater the opportunities for the production of carriers. Isolation of the patient may, of course, be directed by the physician in attendance, and should be directed by him, but he should in every case seek the co-operation of the Division of Health in the institution of quarantine and isolation at the earliest possible moment. In doubtful cases consultations should be held and when the financial resources of the family do not warrant a private consultation this assistance can be secured through the Division of Health. Out of 79 cases available for this study, 24 were reported in less than 48 hours after they were first seen by the physician or after they were admitted to the hospital. This constitutes about one-third of the cases available for this study. On the other hand, in about one-fourth the cases the report was received from one to

three weeks later, showing an unfortunate delinquency in this respect. In a number of cases a death report was the first intimation received by the Division of Health of the existence of a case.

Conclusions

1. The free use of anti-meningococcus serum results in a distinct reduction of the mortality.

2. Immediate hospitalization should be secured for any case in which there is doubt of proper isolation or proper care in the home.

3. Every effort should be made by physicians to secure an early diagnosis.

4. All cases should be reported immediately to the Division of Health.

5. Quarantine and isolation should be established and maintained for the protection of the public.

The thanks of the Division of Health is due to Dr. S. C. Venable, Acting Superintendent of the City Hospital, for permission to use this material, and to Dr. C. F. G. Norlin, of the City Hospital resident staff, for the collection of the data on cases at the hospital. Our thanks are due as well to the private physicians of the city who had cases of cerebro-spinal meningitis during the interval under consideration for their courteous response to the questions asked, only one physician refusing to give the information requested.

THE INDICATIONS AND METHOD FOR REMOVAL
OF THE TONSILS

BY H. G. SHERMAN, M. D.

CLEVELAND

At the dedicatory exercises on the occasion of the founding of the "National Dental Laboratory in Cleveland," Charles Mayo, the distinguished surgeon, now President of the American Medical Association, gave the principal address, and laid great stress upon pyorrhea, and diseased tonsils, as causative factors in certain pathologic conditions of organs having no immediate regional connections with the mouth, and emphasized the importance of considering the tonsils and pyorrhea in their aetiological relation to disturbed metabolism in general. Previous to this occasion, at which I was an appreciative listener, I found myself in the ultra conservative class and commented severely on what I regarded as the indiscriminate operative measures of many of my colleagues. One cannot, however, pass as lightly spoken the words of so careful a surgeon as Dr. Mayo, who cannot be classed as a specialist looking through near-visioned spectacles.

So much has been contributed by those whose experience warrants authority, on conditions associated with diseased tonsils or indirectly due to the same, and the *modus operandi* of infection transmission, that further evidence would seem superfluous, as all practitioners are agreed that hypertrophied and manifestly diseased tonsils should be removed in child and adult life. It is my purpose to call attention to two features of tonsil consideration, which of late has interested me greatly, and perhaps is responsible for my change of view, viz:—indication for removal and method employed. I desire to call attention especially to the apparently inoffensive tonsil, usually in adult life, small, smooth, submerged, without evident crypts, non-adherent to pillars, with no history of throat trouble; and without argument to cite a number of cases illustrating my point.

Case 1. Mrs. W. came to my office accompanied by her husband (a dentist) and requested me to remove her tonsils. It seems that for the past year she had been in ill health and notwithstanding professional advice she had received, which was of high merit, she did not regain strength, and someone (not a physician) suggested

her tonsils as a cause. I protested that I saw no reason for their removal (this idea being acquiesced in by her husband), but she insisted, however, and we complied with her request, finding behind both tonsils a considerable quantity of creamy fluid. The slight rheumatism and her general physical and mental depression almost at once passed, recovery of health being complete.

Case 2. Wife of Dr. S. came to my office a few days later with a story suggesting general systemic infection, although the tonsils gave no outward evidence of disease. On removal they were found to be of the soft granular type filled with caseous deposits; complete recovery occurred in two weeks.

Case 3. Mrs. S., age 73, in poor health for many years, with a history of follicular tonsillitis yearly. Inspection of the tonsils revealed very small, smooth, hazelnut type, without evident crypts. With hesitation I acquiesced to her physician's suggestion for removal of tonsils. The upper portion of tonsils, greatly enlarged, completely covered by anterior pillar, was found in each case to be diseased. Within a month the patient insisted on a miraculous cure.

Case 4. Mr. M., age 46, weighing 215 pounds, apparently in perfect health, was very unhappy by reason of numerous aches and pains, no "pep," as he termed it. The history revealed numerous attacks of quinsy with occasional rheumatism. His entire recovery was very prompt, following the removal of tonsils which were deeply fissured and scarred, with adherent pillars.

Case 5. Mrs. H., age 42, informed me that she had paid several physicians more than eight hundred dollars in her endeavor to regain health, which had never been good, but of late her infirmities had caused her to remain at home under the care of an attendant. The removal of her tonsils, apparently the inoffensive type, led her to write me a most gratifying note, in which she insisted that "tonsils are the root of all evil," notwithstanding all testimony to the contrary.

Previous to my change of views I would not have regarded the tonsils at fault in any of the above cases.

My second observation has to do with the operative technique and I dare say few minor operative measures have undergone so many changes in the last few years as those pertaining to the removal of the tonsils, including the plica at the base. I say removal advisedly, as tonsilectomy is the only acceptable operation in every

instance. As in all departments of surgery details of the operative procedure are accepted which are best adapted to the individual capabilities of the operator.

I now look back with a vision almost akin to horror as I contemplate the incomplete and bloody measures of the past 35 years, associated with howling and struggling youth, regardless of the local or general anesthetic employed, when compared with the operative technique obtaining in my office and elsewhere today, practically painless, bloodless, with a minimum inconvenience, permitting the patient to return to his home within the hour, with no fear of secondary hemorrhage. Complete healing takes place within the week following.

I am a partisan of the employment of local anesthetic, because in my experience it is adapted to practically all cases except the irrepressible youngsters between the ages of 2 and 5 years, who can neither be jollied, held, or reasoned with.

There are very few patients whose confidence may not be gained by the quiet reassurance of the operator that no pain will be experienced, but giving them to understand that the operation is disagreeable, on account of the local anesthetic, mouth gag, etc.

After placing the patient in the ordinary operating chair, all instruments having been previously prepared by thorough sterilization, a 10 per cent solution of cocaine is brushed over the tonsillar area, including the pillars. After two or three minutes again apply, employing a cotton-tipped steel probe so bent that it may be inserted between the pillars and tonsil body, paying particular attention to the superior arch. After waiting a moment one of two procedures is followed, depending upon the age and local conditions, either of which is equally effective as regards the desensitization of the operative area.

In adult cases with recessed and ragged tonsils, with a history of previous attacks of quinsy and tonsillitis, I prefer to follow the dental technique, viz: attach a $1\frac{5}{8}$ inch platinum needle to a Ricord syringe, place the tip of the forefinger on the second molar tooth as a guide permitting the needle to pass over the surface of the nail directly backwards and (previously applying iodine to part) insert needle slowly the full length, which will bring the point over the ramus of the lower jaw at the exit of the inferior dental nerve, slowly expressing the solution (4 per cent novocain and suprenin) as the needle is inserted—thus obtunding sensibility of the area involved.

The other method of employing the local anesthetic is by use of a curved, gold, canalicular syringe tip, adjusted to a long barrelled syringe, which I find to be admirably adapted for the following procedure. Insert the tip between the folds and tonsil structure and press the fluid into the tissues. Wait *ten* minutes and the tonsil may be removed quite painlessly. This method is indicated whenever the tonsil is hypertrophied and full.

Great care should be exercised not only in the sterilization of the needle in the alcohol flame, but also in the preparation of the novocain solution, which in itself is only slightly toxic. Our method is to place the tablets (novocain and suprarenin) in the porcelain receptacle provided for that purpose, using distilled water, bring to boiling point over the alcohol flame.

After the injection wait *ten* minutes. Insert the mouth gag, have the patient (if adult) depress the tongue, fully exposing the field, then with a long handled tenaculum or claw forceps draw the tonsil forward, and grasp with the fixation forceps. It is important to observe the minutest detail in this procedure, as it facilitates the further technique greatly. The upper blade should fix the tonsil at the arch, the lower at the most inferior point; after locking forceps, pull forward to tension, pass the knife, slightly or full curved, between the anterior pillar and the tonsil structure. One quick stroke downward separates the pillar from the tonsil. Re-enter knife at original point near arch, turn and separate arch and posterior pillar, always making traction on the tonsil. The blunt dissector is then employed for further separation from above downward; then wire loop in pistol snare bent at an angle of 30 degrees or more, conforming to the tonsil operated, is passed over forceps and carefully adjusted, so that all tissue is engaged, then pressed home. The field is usually clear; if, however, any remnant remains, especially at the base, grasp with forceps and remove with scissors. The field is dried with cotton, all capillary hemorrhage stopped, then sprayed with a 20 per cent solution of argyrol, which forms a gluey coating that is protective and antiseptic.

The patient is directed to employ any cleansing mouth wash several times daily and directed to return for inspection in a week, if not at too great inconvenience, by which time the parts are usually healed. Occasionally the patient complains of dizziness and fullness in the head following the injection of the solution, due no doubt to the suprarenin, but this sensation passes in a moment and the patient quickly reacts.

METHODLESS TECHNIQUE FOR CATARACT OPERATION

BY H. G. SHERMAN. M. D.

CLEVELAND

Opacity of the crystalline lens of the eye, whether due to senile change or traumatism, is of such frequent occurrence and is so important in relation to life's possibilities, whether viewed from a purely practical or utilitarian point of view, or from the larger sense of all that vision implies, that one is perhaps justified in presenting some suggestions on a subject upon which the last word has not yet been spoken.

By most persons, vision is valued next to life itself. While there are many instances of complete blindness having inspired persons to great achievements that have enriched the world, the fact nevertheless remains that blindness is a great affliction and has cut short many a brilliant career in arts, in physical and mechanical sciences, and in all cases is a handicap in life's work. To overcome this defect only surgical means are available, and no prescribed surgical procedure is accepted as final.

Having operated on more than a thousand cases, with a series of successes and failures ranging from seven failures (maximum) in a hundred, to 149 successive cases with no case in the series measuring below 20/70 vision, I am emboldened to offer some observations and to protest that some methods now advocated may lead the inexperienced into paths which ought to be trodden only by those who are especially qualified by large experience and skilled technique, surrounded by an environment necessary for success. Because failure to restore vision is akin to tragedy in many cases, where the patient not only becomes a burden to himself but to others.

I refer particularly to the so-called "Major Smith Operation," which delivers the lens with the capsule intact. In the hands of some of those who have been privileged to operate under the direction of Major Smith in India, most gratifying results have been obtained, and one is tempted to emulate their example, only to find the lure deceptive. I do not so state from personal experience, as I have never intentionally attempted to exploit my skill (if I may be pardoned) in the simple extraction method. I have, however, un-

intentionally made a number of such operations, aided by the patient's unexpected efforts, and just here lies the danger—*the patient's unintentional effort*, and I beg to impress upon all operators, no matter how skilled, that the personal equation of the patient is something that cannot be measured; hence, "safety first, last and all the time," should be the guide of the man in whose hands is placed the possible restoration of one of God's most precious gifts to man—*eyesight*.

The query naturally follows: What method is safest? I answer, *no method*. Granted that the Major Smith operation is justifiable in the hands of a few, I protest that it should not be attempted by the ordinarily trained oculist, as the lack of competent assistants (which should equal the skill of the operator) insures too great a risk of failure. As to other prescribed methods, advocated by men of undoubted skill, under whose hands a large measure of success is enjoyed, I confess I have not witnessed a sufficient number of successes to warrant adoption by myself. I trust I am not standing in my own light, nor impeding the path of progress, by suggesting how *not* to do attractive operations in order to achieve success.

I have found by experience that avoidance of any preconceived *method*, having in mind only the extraction of the lens, with the least possible injury to the parts in their relation to each other, by such measures as are generally accepted, adapting one's technique to the conditions as they arise in any given case at any stage of the operation, will reap the richest reward for the patient and for the operator.

AN IMPROVED AND RATIONAL TREATMENT FOR MORPHINE ADDICTIONS

BY M. LOEWENTHAL, M. D.

CLEVELAND

The main thing in treating these unfortunates is (as I have mentioned in my previous article on the treatment of drug addiction) to get full control of them by securing their confidence and having a thoroughly competent and trustworthy nurse in charge.

Secondly: to keep these patients restricted to their rooms and not permit them to come in contact with their friends during the time of their treatment.

Upon entrance to our sanatorium, I order the patient to undress in one room, and after receiving a warm bath he is dressed in one of our hospital gowns and removed to another room, so that no hiding of drugs is possible.

I will cite here a few cases entirely cured by our improved treatment whereby the patient is not subjected to suffering and also neurotic pains are avoided. Twenty-four hours after having the smallest dose of morphine, I always recommend as a clincher keeping the patient under the influence of hyoscine for about fifteen or twenty hours.

Case 1. Miss H., recommended by the Federal authorities, entered the Rest Cure Sanatorium October 14th, 1916, apparently taking gr. 20 morphine daily.

October 14th—6:00 P. M., warm bath, cathartic comp. pills and calomel gr. 1 divided into three doses. 9:30 P. M., gr. $1\frac{1}{2}$ morph. hypo.

October 15th—6:00 P. M., magn. sulf.; gr. 1 morph. hypo. every 4 hours and gr. $1\frac{1}{2}$ at bed-time. Mixt. hyoscyam., bellad. and xantotoxylin 1 dram every 4 hours daily.

October 16th—gr. $\frac{3}{4}$ morph. every 4 hours and gr. $1\frac{1}{4}$ at bed-time—hot bath and sweat pack.

October 17th—gr. $\frac{5}{8}$ morph. every 4 hours and gr. 1 at bed-time; again cathartic comp. and calomel followed by mg. sulf. in the morning.

October 18th and 19th—gr. $\frac{1}{2}$ morph. every 4 hours and gr. $\frac{3}{4}$ at bedtime.

October 20th and 21st—gr. $\frac{3}{8}$ morph. every 4 hours and gr. $\frac{1}{2}$ at bedtime.

October 22nd and 23rd—gr. $\frac{1}{4}$ morph. every 4 hours and gr. $\frac{1}{2}$ at bedtime, hot pack and sweat pack.

October 24th and 25th—gr. 3-16 morph. every 4 hours and gr. $\frac{3}{8}$ at bedtime, again cathartic comp. and calomel and mg. sulf. in the morning.

October 28th and 29th—gr. $\frac{1}{8}$ morph. every 4 hours and gr. $\frac{1}{4}$ at bedtime.

October 28th and 29th—gr. 1-16 morph. every 4 hours and gr. $\frac{1}{4}$ at bedtime.

October 30th—gr. 1-16 morph. every 4 hours and gr. 1-16 at bedtime.

October 31st—7:00 A. M., gr. 1-300 hyoscine hypo—8:00 A. M., gr. 1-300 hyoscine hypo.—12:00 noon, gr. 1-300 hyoscine hypo.—4:00 P. M., gr. 1-300 hyoscine hypo—4:00 P. M., warm bath.

Case 2. Mrs. W., recommended by Dr. W. N. B. of Cleveland, entered the sanatorium November 4th, 1916, apparently taking gr. 18 morphine daily. The same reduction treatment given as in case one, but having vomiting as a complication, we gave natr. bicarb. gr. xxx; also strychn. nitr. had to be given.

Case 3. Mr. H. B., recommended by the Federal authorities, entered the sanatorium March 17th, 1917, apparently taking gr. 30 morphine daily. The same treatment as in case two, but we had to start with gr. $2\frac{1}{2}$ morphine at bedtime and gradually reduce.

Case 4. Mr. N. A., recommended by Dr. J. G. of Cleveland, entered the sanatorium March 26th, 1917, apparently taking gr. 20 morph. daily. The same reduction treatment as in case one, but as a clincher we had to use gr. 1-200 hyoscine.

Case 5. Mr. A. A., brother of N. A., recommended also by Dr. J. G., Cleveland, entered the sanatorium April 30th, 1917, for the same treatment as case four, and after the latest report by Dr. J. G., patients have gained in weight 25 lbs., are working every day and doing very well.

For the after treatment it will be advisable to keep the patient under strict observation for two or three weeks; a tonic is generally necessary to be given and also pulv. veronal and natr. brom. for restlessness and sleeplessness is indicated.

Certainly there are some patients with very low vitality and in these cases it would take from three to four months for this treatment.

It is always my desire upon discharging the patient to get in touch with his regular family physician and to give him full information about the condition and my treatment of his patient, as it is of great importance to have such cases under observation during and after the stage of convalescence for a period of time.

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EDITORIAL

MARS AND MEDICINE

The great god Mars having drawn almost all human institutions into his voracious maw, we are most painfully concerned about the changes his mastication will produce in our own beloved profession. Is this complete upsetting of our former well-ordered lives, this pulling of men from ward and from laboratory to field

and cruiser, this transferring of our attention from hormones and amboceptors to shrapnel wounds and trench fever—are all these phenomena ephemeral or vital? If vital, do they not indicate an interruption to the advance of medical science?

We see only the obvious results of this war because it is so close at hand that we have no perspective. Yet a glance at history will prove that the obvious results of the vast world movements of the past have, in the light of later years, proved frequently to be very unimportant. Other results, of which the actors of those world movements never dreamed, have been the things that have influenced mankind to the present day. Let us take the crusades as an illustration. Hundreds of thousands of men, yes, and of women and even of little children, marched and died on the endless plains of Hungary and the burning wastes of the Holy Land—for what? For the fantastic, useless, foolish scheme of rescuing an empty rock tomb from men who did not believe exactly as they believed. The tomb was not even like ordinary tombs in that it actually held the sacred dust of Him the crusaders worshipped. According to their own faith, He had risen, and left those stones empty eleven hundred years before their time. Could anything be more foolish? Could anything influence following ages less than the useless waste of those thousands of lives? The result of the crusades that men of that age saw was merely that a man named Godfrey of Bouillon ruled Jerusalem for fifty years, and then the Moslem came into his own once more. But what are the results we of a later age know came from the crusades? Europe fraternized on those long marches. Men got from each other the best each had to offer. When the East was reached, men learned once more the Greek and Latin tongues; and the wealth of the ancient, apparently dead, civilization was opened up. So the real results of these foolish crusades was the astounding brilliance of the Renaissance.

The world is now in greater turmoil than even in the crusades. Vast and new intellectual development must emerge. We are being thrown intimately with the best medical minds of our allies, and every letter from the front brings word of the great admiration our men feel for the attainments and scientific zeal of English and French medical men. Possibly we as a nation of doctors sat too

long, a gaping boy, at the feet of the Teutonic masters. It may be well for our development to leave the professors of the sixth decimal place and receive wisdom from the countrymen of those broad-visioned scientists, Pasteur and Lister. We have been slaves to the Teutonic standards of medical science too long. It is somewhat of a relief to find, in the latest volume of a book of surgical abstracts, that only 15% are from the pens of Germanic writers. In the 1914 volume, the percentage was 52.

The trouble with modern medical writings is that, under Germanic tutorage, they show a Gradgrind slavery to fact, with no inspiring spark of imagination. After all, the imagination is the driving force of the world. Because it is lacking in our intellectual processes today, the medical profession loses much with the mass of the people. Hence comes the opening for quacks innumerable. This is no plea for inaccuracy or vague theorizing. Darwin was the most accurate scientist the world has seen, yet he could write a book that has fired the imagination of mankind as no work of fiction ever did. It was the difference between the mental attitude of an English man of genius and a German man of genius. One writes to be read: the other to put fact on record.

Medicine owes to Germany a debt it can never repay. Nevertheless, if this war opens our eyes to the vast mass of good work done in other countries, medicine in the United States will advance faster than it ever has in the past.

As the crusader from England marched and talked with the one from Italy till his vision was broadened and his mind prepared to take fire when he came into contact with the blaze of Greek culture still smouldering in Constantinople and the East, so our fellow medical officers are having their intellectual horizon vastly broadened as they mingle with the best of France, England, Italy and Russia. As the middle age warrior finally burst the bonds of the scholasticism of his time and emerged into the Renaissance, may it not be that we are about to escape from the pedantry and precision of our times, and expand into the freshness of thought and originality of viewpoint of the older French and English medical writer? The crusaders rediscovered Plato and Pliny as living forces in the world of thought. Can we rediscover Paré, Harvey, and Hunter?

SIMPLE JUSTICE

In a great crisis, like the present, the people of the nation and its rulers turn with one accord to the physician. First of all he is called upon to examine the recruits to see if they are physically fit for service, and this service he renders gladly, without money and without price. Today there is scarcely a medical man in the city of Cleveland or in the nation at large, irrespective of those who have volunteered for active duty, who is not "doing his bit," silently and without ostentation. As a citizen the medical man is liable to conscription between the ages of 21 and 30. Although thousands have already offered their services, there nevertheless remains the possibility that medical men between the ages of 22 and 55 may be conscripted.

Nor do the duties of the medical man cease when he has decided whether or not a recruit is fit for service. Upon him devolves the duty and responsibility of *keeping* the soldier fit for service. He must see that pure and adequate food and water are provided and that proper hygienic measures are instituted and carried out. As a result of his painstaking efforts typhoid fever and small-pox have been practically banished from the armies in the field, while the ravages of many other former scourges have been reduced, almost to the vanishing point. Not only is it his duty to keep the soldier fit for fighting, but when he is wounded it is the medical man who operates, if that may be necessary, and nurses him back to life and health; in many cases rendering him again fit for active service in the field.

But let us contrast the position of the medical man in time of war with his unenviable position in times of peace. There is scarcely a session of the legislature of any of our various states before which some bill is not introduced to confer medical privileges upon and license the practice of Christian Scientists, Faith Healers, Osteopaths, Chiropractors and Optometrists; not to mention the scores of other sects and cults which spring up sporadically and quickly gain a following. If now the medical man, to safeguard the public and protect himself, demands that these followers of the new gods fulfill the same requirements as to preparation which he

himself has satisfied, he is branded as a quack and charlatan, he is villified and abused, while his efforts are characterized as springing entirely from ulterior motives.

If the nation in time of war can look to the medical man to examine recruits for the army, to keep the soldier physically fit for service, and to care for him when wounded, that battles may be won and (tho we blush to mention it) that the pension rolls may be protected afterwards; can it not offer to the medical man something more than the semblance of recognition and protection in times when the extreme need for his services may not be so apparent? Isn't there a simple justice which is equally applicable to times of peace, as well as times of war?

THE PRESENT EPIDEMIC OF PERTUSSIS

As the physicians of the city are well aware, the Division of Health is striving to check the present widespread epidemic of pertussis before cold weather sets in. Unless this is done the community will be menaced by the disease and its complications throughout the winter.

Unfortunately, the disease established itself in practically every portion of the city, and the epidemic assumed alarming proportions before the department was fully informed of its existence. This was due largely to the fact that the majority of mothers looked upon the disease as an ailment of minor importance—"something to be had early and gotten over with."

Because of this attitude a great many mothers did not report cases to their physicians. In fact, investigation has shown that at the beginning not ten per cent of the cases were brought to the attention of physicians or of this department.

When, however, through the earnest co-operation and efforts of physicians and the daily press, mothers were made to realize the serious character of the disease and the importance of promptly reporting all cases, our knowledge of the situation was made more complete and we were able to deal with it more intelligently.

The fact that more than 70 deaths, out of some 1,500 cases, have been reported to this department since January, 1917, indicates the severe character and virulence of the disease in the present epidemic. The increased number of cases also indicates how little

the public appreciates the contagious nature of the disease and the method of its spread.

It is also evident, after going over the records of the department for the past few months, that numbers of deaths reported as due to pneumonia and gastro-enteritis have really been due to pertussis, which paved the way for later complications.

As a part of its campaign against the present epidemic the department has recommended the use of pertussis vaccine. Before doing so, however, the value of this vaccine was carefully investigated, particularly the results obtained from its use in the City Hospital and among a number of private physicians in this city.

Physicians interested in the subject will find much valuable information in the following articles:

The Therapeutic Value of Pertussis Vaccine in Whooping Cough.

Anna I. Von Sholly; Julius Blum; Luella Smith. *Jour. A. M. A.*, Vol. LXVIII, No. 20, pp. 1451-1454.

Whooping-Cough. Its Treatment and Prophylaxis Based on the Bordet-Gengou Etiology. Paul Luttinger. *New York Med. Jour.*, May 22, 1915.

The Vaccine Treatment of Whooping-Cough. E. M. Sill. *Am. Jour. Diseases of Children*, May, 1913, and *Amer. Medicine*, June, 1913.

Pertussis. By Isaac A. Abt. Trans. 7th Annual Meeting, Amer. Asso. for Study and Prevention of Infant Mortality, 1916, pp. 120-140.

The Morbidity and Mortality of Pertussis and Measles, with Particular Reference to Age. Borden L. Veeder. *Archives of Pediatrics*, Vol. XXXIV, No. 5, May, 1917, pp. 321-337.

Although physicians have already co-operated with the department in a thorough and heartfelt manner, there is greater need of vigilance now than ever before if active cases are to be kept out of the schools. To prevent this the Division of Health is co-operating with the Department of Medical Inspection of the Board of Education, but private physicians can aid much by promptly checking up and reporting all suspicious cases of school age.

ABSTRACTS

ABSTRACTS IN MEDICINE

The Influence of Splenectomy on Metabolism in Anemia. W. Denis, *Arch. Int. Med.*, 1917: XX: 79.

The writer studied the metabolism before and after operation in six cases of anemia in which splenectomy was performed. These included two cases of pernicious anemia, two of Banti's disease, one of family jaundice and one of "atypical splenic anemia."

It was found that while, in some of the cases examined, changes in the excretion of certain bodies occurred, the changes were not constant; thus in two cases the uric acid output was much increased after operation, in one it was reduced, while in three no change was noted. In a series of observations on the phosphate excretion it was found that while in five cases the output of phosphates by the kidney was increased after operation, in one it was decreased. A study of the sulphur excretion showed no changes, either relative or absolute, which in any way could be attributed to the removal of the spleen.

R. W. S.

A Study of Renal Function in Patients Convalescing From Acute Fevers. Arthur Bookman, *Arch. Int. Med.*, 1917: XX: 112.

The writer states that the results of tests of renal function yield no absolute conclusions as to the kind and degree of histologic damage the kidneys have sustained. On the other hand functional tests will often reveal a nephritis which would not be recognized by other methods of examination. Absence of albumin and casts after fever is not a guarantee that the kidneys are normal. Febrile albuminuria he believes is usually dependent on an actual nephritis, and his results seem to indicate that the albumin disappears long before the kidneys have recovered completely.

A low phthalein output in the acute fevers has not the same prognostic significance as in chronic nephritis.

R. W. S.

Study of a Case of Diabetes Insipidus with Special Reference to the Mechanism of the Diuresis and of the Action of Pituitary Extract on It. C. D. Christie and G. N. Stewart, *Arch. Int. Med.*, 1917: XX: 10.

In a careful study of a case of diabetes insipidus occurring in a woman aged 31, the writers were able to demonstrate a marked antidiuretic action of posterior lobe extract. It was shown that under the action of the extract the kidneys had the power of effecting a considerable concentration of the urine. Other kidney functional tests, i. e., phenolsulphonephthalein excretion and blood urea failed to show any pathologic alteration in the kidney.

R. W. S.

Grave Diabetes Mellitus with Pulmonary Tuberculosis Following Mumps. F. B. Gilhesby and H. S. Holden, *Brit. M. J.*, 1917: II: 115.

The observers report the case of a boy aged 16½ years undergoing training in a harbour ship. The third or fourth day following an attack of mumps the boy developed polydipsia and polyuria. Upon physical examination active pulmonary tuberculosis was found. The diabetes was readily controlled by starvation and diet—but the tuberculosis rapidly advanced—the patient dying in five months. The microscopic examination of the tail of the pancreas showed infiltration, some of the islands of Langerhans showed evident hyaline degeneration. Morely Fletcher is quoted: "Severe abdominal pain starts within a week of the onset of mumps—usually the fourth or fifth day—and is accompanied by vomiting and diarrhoea. The pain is

usually epigastric and the tenderness above the umbilicus, with the presence of swelling or diffuse resistance can often be made out. The immediate prognosis is good, and the patient is usually free from abdominal symptoms within a week. Some cases of diabetes may have their origin from inflammatory changes brought about in the pancreas by an attack of mumps."

H. S. F.

Case of Hemiplegia Following Pleural Effusion. G. De B. Turtle, *Lancet*, 1917: CXCII: 161.

The patient, aged 23, had pleurisy with a large effusion. The fluid was aspirated three times at intervals of several days. Four days following the third aspiration the patient suddenly sat up in bed, gave a cry and fell back. On examination he was found to have a hemiplegia of the right side, with a motor aphasia. Paralysis of the arm and leg was complete, but the associated movements of the face could be partially performed on the right side. Increase of the knee jerk, ankle clonus, and a definite Babinski were found. Sensation was slightly impaired—the bladder and rectum were not affected. The cause of the hemiplegia was undoubtedly embolic, probably a small fragment having been dislodged from a clot in the left pulmonary vein.

H. S. F.

ABSTRACTS IN SURGERY

An Analysis of 133 Fractures of the Spine Treated at the Massachusetts General Hospital. John B. Hartwell, *Boston M. & S. J.*, 1917: CLXVII: 31.

The statistical tables given confirm the accepted view that there are two regions of the spine especially likely to suffer fracture, the mid-cervical and the dorsal-lumbar. In addition to compression fractures of the vertebral bodies and fractures of the vertebral processes, there were three cases of fractures of the inter-vertebral discs. The injury most frequently complicating fracture in the cervical region is fractured skull; in the dorsal region fracture of the ribs is the most common injury; and complicating fractures of the lumbar spine, fractures of the lower extremity are most frequently noted. When shock is present it is generally due to complication and not to the spinal fracture itself. A fact of great importance is that, of the 67 patients who had cord lesions, in 66 the onset of the paralysis was immediate, and in only one was it gradual. Priapism is a bad prognostic sign. Subjective pain at the site of the fracture was conspicuous by the infrequency of its mention. Localized tenderness was present in practically every instance of fracture of the spine. And as a corollary to this, localized tenderness over the spine should always suggest the possibility of fracture. For a satisfactory X-ray plate it is often necessary to take several exposures, and further, the usual antero-posterior views, though the plates be excellent, often do not clearly show a compression fracture that is unmistakable in the lateral view. Conclusions as to the condition of the cord drawn from the appearance of the cerebro-spinal fluid got by lumbar puncture may be misleading. A bloody cerebro-spinal fluid may indicate that the cord is lacerated, but clear fluid does not exclude the possibility of severe trauma of the cord.

The operative findings indicate that extra-dural and subdural hemorrhages, secondary to spinal fracture, are infrequent, and rarely large enough to account for compression symptoms. In not a single instance was bone pressure on the cord demonstrated. Taken as a whole, the results of laminectomy in this series of fracture of the spine do not justify an argument in favor of operation, but on the contrary serve as a warning against radical surgical treatment. Four deaths to which operation directly contributed, in thirty-five cases operated upon, is a high mortality. In this series of cases, with one exception, the onset of paralysis did not succeed the injury but was the direct accompaniment of it. The paralysis was present

before the effects of hemorrhage, or edema, or bone pressure could work on the cord. The cord hangs so loosely in its dural envelope that a very considerable hemorrhage may occur within the dural sheath and no compression of the cord result, and there is ample room for any swelling of the cord from secondary edema. Bone pressure must be rare, and in such instances irreparable damage has been done before operation can be accomplished. Furthermore, Taylor's observations, that cord lesions occur at a distance from the level opposite the site of fracture, seem to be given no weight by those authors who are enthusiastic proponents of routine laminectomy in cases of vertebral fractures with accompanying cord symptoms. Sixteen per cent of the necropsies showed cord lesion so remote from the site of injury that an ordinary laminectomy would completely fail to reveal them.

Laminectomy cannot be considered other than a major operation, and the desperate condition of the patient does not warrant the surgeon in adding the risk of operation unless there is more than a visionary chance of bettering a hopeless condition. A major operation is not justified on the basis that it will do no harm, and can conceivably though improbably do good. Laminectomy is indicated in the rare cases of gradual onset of medullary symptoms, and in patients who, originally free from cord symptoms, begin to develop symptoms referable to the cord. C. H. L.

Observations on Gas Bacillus Infection in France. J. R. Judd, *Surg., Gynec. & Obst.*, 1917: XXV: 113.

After a period varying from 12 hours to several days after being wounded, the patient complains of severe pain, the limb becomes swollen and tense, the pulse rapid, and the mentality apathetic. The wound discharges a thin, brownish pus, and pressure may expel some gas. The skin changes in color, varying from porcelain to black. Vesicles appear. Percussion may give a tympanitic note and palpation reveal crepitation. The odor is characteristic, nauseating, the ammoniacal or fetid odor of decaying flesh, and permeates the whole ward. It is not an early symptom. Clinically there occur mild superficial forms and severe deep forms. Wounds of the thorax with subcutaneous emphysema are to be excluded in diagnosis, likewise wounds of the rectum with emphysematous abscess. The crepitation of a comminuted fracture is to be kept in mind. The entrance of air into the path of a projectile is differentiated by the lack of general symptoms and the limitation of the emphysematous area to the lesion, and by its rapid absorption.

Prophylaxis includes personal and trench cleanliness, early incision of wounds with excision of damaged tissue doomed to slough, and the removal of foreign bodies. The therapy consists of early and deep incision, laying the tissues open to the air, and allowing the fluid and gas to escape. The French surgeons recommend pouring ether into the wounds. Probably the best antiseptic is Dakin's solution. Amputation is often necessary, should not be too long delayed, and should be practiced according to the classical method of Celsus, by which all the tissues are rapidly divided at the same level, the wound left wide open. C. H. L.

Perforations of Gastric and Duodenal Ulcers. Byron B. Davis, *Surg., Gynec. & Obst.*, 1917: XXV: 162.

Twenty per cent of duodenal ulcers sooner or later perforate, 7% of gastric ulcers. The acute perforations are fatal unless diagnosed and operated early i. e., within a few hours. There is sudden onset of pain, acute, agonizing, unendurable. The patient lies absolutely quiet, breathing only with the chest, every movement increasing his pain. This tense, motionless attitude is in marked contrast to the extreme restlessness of one suffering from severe colic, whether renal, intestinal, or hepatic, where the position is constantly changed with the hope of getting relief. Almost immediately after the per-

forations, the abdominal muscles become board-like, so much so that one feels he might stand on the abdomen and make no impression on the tensely contracted muscles.

The early symptoms of gastric and duodenal perforations are much the same. Later there are one or two points of difference. In perforated anterior gastric ulcer, the pain and tenderness become generalized over the abdomen, especially to the left and central portions, due to the more general soiling of the peritoneum. On the contrary the fluid from a duodenal perforation is carried along the trough of the transverse colon, around the hepatic flexure, along the outer side of the ascending colon to the right iliac fossa, with tenderness over McBurney's point. Thus a mistake in diagnosis of ruptured appendix is common. In a short time, in both types, the symptoms are those of a general peritonitis.

Turning in of the ulcer with suture or excision is all that should be attempted in the bad cases. Gastro-enterostomy should be reserved for a later operation and often will not be required if undue narrowing of the stomach outlet is avoided. Drainage of the cul-de-sac of Douglas by means of a large rubber tube inserted through a stab wound is recommended. Also a split rubber tube enclosing gauze should be led to the region of the perforation. There should be no irrigation and no extensive mopping.

C. H. L.

The Relation of the Iliohypogastric Nerve to the Radical Cure of Inguinal Hernia. Moschowitz and Neuhof, *Ann. Surg.*, 1917: LXVI: 79.

This work was undertaken to determine whether that part of the iliohypogastric nerve which is ordinarily exposed in any one of the conventional operations for the radical cure of inguinal hernia is sensory, motor, or mixed. Operating on dogs, the authors divided within the spinal canal the anterior motor nerve roots going to form this nerve. Subsequently the motor fibres of the nerve degenerated, the sensory did not. Two successful experiments proved the posterior part of the nerve to be both motor and sensory, but that part exposed in operation for hernia to be purely sensory. Hence, the careless division of it is not followed by a local paralysis of the internal oblique muscles. It should, however, be saved if possible, as its division leads to temporary anesthesia of the hypogastric region. It should also be protected from a careless inclusion in the suture line, as this is likely to be followed by neuralgic pain.

C. H. L.

ABSTRACTS IN NEUROLOGY

Progressive Atrophy of the Globus Pallidus. J. Ramsay Hunt, *Brain*, London, 1917: XL: 58.

From a clinical and pathological study of four cases belonging to the paralysis agitans type and a study of the literature on the subject, the author states the following concerning the physiology of the corpus striatum:

"Physiological.—The corpus striatum is the great infracortical centre for the control and regulation of automatic and associated movements. It is composed of two cellular systems, viz., the small ganglion cells of the caudate nucleus and putamen (neostriated) and the large motor cells of the globus pallidus mechanism (pallidal). The function of the neostriatal cells is inhibitory and co-ordinating; that of the pallidal cells is motor.

Loss of the small-cell inhibitory system is followed by chorea; loss of the large-cell motor system by the paralysis agitans syndrome, viz., rigidity, tremor, and disturbances of automatic and associated movements.

A destructive lesion involving both types of cells in the caudate nucleus and putamen (the *état marbre*) produces the Vogt syndrome of the corpus striatum, viz., spastic diplegia with atherosclerosis, rhythmic oscillations and pseu-

dobulbar palsy. A massive lesion of the whole corpus striatum as in progressive lenticular degeneration produces the Wilson syndrome, viz., tremor and rigidity of the paralysis agitans type, together with tonic and clonic spasms and occasionally choreic and athetoid movements (Grower's tetanoid chorea).

The Vogt syndrome and Wilson's syndrome therefore represent different degrees of involvement of these two cellular systems. The occurrence of muscular rigidity, rhythmical tremor, chorea, athetosis, tonic, clonic and mobile spasms will depend upon the distribution and involvement of these two cellular systems.

Athetosis, therefore, is simply a combination of chorea and rigidity from simultaneous destruction of the smaller (inhibitory) and larger (motor) cell types of the neostriatum.

The globus pallidus mechanism is the motor nucleus of the striate body and through its connections with important centres in the hypothalamic region, viz., the nucleus ruber, corpus subthalamicum and substantia nigra—exercises a controlling influence upon the segmental nervous system through the medium of the extra-pyramidal motor tracts. The corpus striatum has also close relations with the cerebral cortex, the cerebellum, and the peripheral sensory mechanism, through its connections with the great sensory correlating station, the optic thalamus.

The cells of the globus pallidus type, therefore, occupy the same position in the extra-pyramidal motor system as do the motor cells of the cerebral cortex in the corticospinal system; the globus pallidus mechanism controlling automatic and associated movements, whereas the higher cortical centres are concerned with isolated synergic movements.

Both of these mechanisms, in addition to the function of motor innervation, have also a controlling or inhibitory effect upon muscle tonus, so that a destructive lesion of either has as a result paralysis of a special type plus an increase of muscular tonus. A lesion of the pyramidal tract system is followed by the phenomena of spastic paralysis; a lesion of the pallidal system by the phenomena of paralysis agitans.

Three fundamental types of motor palsy may therefore be recognized; two are central and one is peripheral:

(1) A spastic paralysis of cortical origin—from involvement of the first or central motor neurones.

(2) A paralysis agitans of pallidal origin—from involvement of the motor neurones of the globus pallidus mechanism.

(3) An atrophic paralysis of peripheral origin—from involvement of the second or peripheral motor neurones."

T. S. K.

Prognostic Immediat et Lointain des Convulsions Infantiles (1). André Collen et Mlle. Thérèse Revon, *Arch de Med. d. Enf.*, 1917: XX: 281.

The prognosis of convulsions in infants, both immediate and distant, should be based on the type of the attacks, of which there are two. The one consists of clonic movements and are benign or episodal; the second, of tonic movements and are malign indicating a grave epilepsy.

The clonic type are considered to be due to an excitation of the bulbo-medullary centers and not of the cortex. Infants having clonic convulsions usually have a definite neuropathic heredity and show an excitable nervous system by extension of the great toe on plantar stimulation, exalted reflexes, syncinesis, and tendency to maintain given attitudes. The author believes these signs indicate an insufficient cerebral physiological activity giving rise to lack of proper cerebral inhibition over the medullary centers. Such infants are called the spinal or medullary type. They are especially susceptible to any mechanical, toxic or physical excitation, showing this susceptibility

by clonic bilateral convulsions. This type of convulsions occur most commonly in the first year and rarely after the second.

The tonic convulsions, on the other hand, indicate a lesion of the ganglion cells of the cerebrum, produced by some physical, toxic, mechanical or infectious agent. Such a lesion gives rise to an excitation of some part of the brain which if sufficiently prolonged or severe causes the true epileptic attack accompanied by grave respiratory symptoms. As such convulsions are due to pathological changes in the nervous tissues the prognosis is bad both for immediate and especially for ultimate recovery.

T. S. K.

The Influence of Labor on the Brain Development of the Child.

Arthur Stein, *J. Am. M. Ass.*, 1917: LXIX: 334.

From personal observation and a careful review of the literature, the author arrives at the following conclusions regarding the influence of labor on the brain development of the child:

1. Prolonged, unassisted labor is responsible for much avoidable, harmful compression of the infant's skull in the birth passages during the period of labor.

2. The damage sustained by the child's brain and meninges often affects intellectual growth, resulting in the production of all degrees of mental impairment, from feeble-mindedness and imbecility to absolute idiocy.

3. The connection between obstetric traumatism and nervous disease in the widest sense of the term has not received sufficient consideration in the past on account of the nonexistence of a systematic co-operation between maternity hospitals and institutions for feeble-minded children.

4. In the interest of more efficient control of preventable idiocy a better co-operation in the form of a more detailed record of the conditions during labor and of the subsequent mental development of the children urged.

5. A better understanding between obstetricians and neurologists will help to diminish the number of imbeciles and idiots.

6. The obstetric forceps, correctly applied, are a beneficent weapon against the abnormally prolonged passage of the child's head through the pelvic canal.

7. Pituitary solution in small doses (from 2 to 3 minims) hastens the course of labor in many cases, rendering the application of the forceps unnecessary and safeguarding the contents of the infant's skull.

In the discussion of the paper Dr. Peterson states that, from studies made by Dr. Sacks and himself, the application of forceps in tedious labor cases does less damage to the brain than the long continual compression.

T. S. K.

ABSTRACTS IN PEDIATRICS AND CONTAGIOUS DISEASES

Concerning the Indications for and Dangers of Tonsillectomy. George B. Wood, *Am. J. M. Sc.*, 1917: CLIV: 188.

Wood refers to the operation of tonsillectomy as a well recognized procedure, perfectly justifiable, and as the most common surgical operation. There are certain definite indications for tonsillectomy and also certain dangers in its use. It is often that the benefit to the patient from the removal of diseased tonsils outweighs the danger of the operation. The indications for removal of the tonsils may be divided into two classes: (1) Those in which the tonsils are responsible for local disturbances, and (2) those in which the tonsils act as a gateway of entrance for a systemic infection. Patients suffering from repeated attacks of follicular tonsillitis or those who have recently had one or more attacks of peritonsillar abscess should have their tonsils removed. Tonsils enlarged by an acute inflammation may bring about

serious interference with respiration and in some of these cases we may choose immediate tonsillectomy rather than tracheotomy. When the enlargement of the tonsils extends upward and outward into the palate the upper surface of the palate may be raised so as to interfere with Eustachian drainage, a condition which predisposes to otitic disturbances. The writer advises removal of the tonsils in any patient under ether for removal of adenoids if there is the slightest indication of trouble originating in the tonsils unless there is reason for avoiding more surgery than necessary or in children under two years of age. To aid in the problem of whether the tonsils are foci of general infection the author advises cultures from the crypts. Among the dangers of the operation comes the anesthetic. In children general narcosis is always advisable and ether given by the open method is the safest anesthetic to use. Nitrous oxide should never be used in children under ten years of age and chloroform never. The most disagreeable accident of the tonsil operation is hemorrhage. A knowledge of the regional anatomy, care in operating, and catching the bleeding points are indicated. Infection of the tonsillar wound is usually of a mild degree. Recently a number of cases of lung abscess following tonsillectomy have been reported. Permanent deformity or loss of function of any of the structures of the throat are rare unless dependent upon faulty technic on the part of the operator.

H. C. K.

Comparison of Several Methods of Specific Early Treatment of Acute Anterior Poliomyelitis. H. Ulrich, *Boston M. & S. J.*, 1917: CLXXVII: 78.

One hundred twenty cases were studied and divided into six groups. Group I was treated with three intraspinal injections of immune serum; Group II was treated similarly with normal serum; cases of Group III were injected with their own cerebrospinal fluid; Group IV was treated by simple withdrawal of spinal fluid; Group V received no specific treatment; Group VI comprised cases of doubtful diagnosis, one dying with pneumonia, and the others were moribund on admission. The immediate effect and the final results obtained show that none of the measures had any favorable influence. Ulrich concludes that the measures are useless, at least after paralysis has been established, and that the manipulation of the patients and the pain of lumbar puncture are harmful during the early stage of the disease when rest is so essential.

H. C. K.

Relation of Mosquitoes and Flies to Epidemiology of Acute Poliomyelitis. H. Noguchi and R. Kudo, *N. Y., J. Exper. Med.*, 1917: XXVI: 49.

The experiments performed indicate that it is improbable that the virus of poliomyelitis is taken by mosquitoes or by fly larvae. The virus fails to multiply and is also probably rapidly destroyed within the bodies of the insects. Non-biting flies do not act as intermediary hosts.

H. C. K.

Establishment, Maintenance, and Reinstitution of Breast Feeding. J. P. Sedgwick, *J. Am. M. Ass.*, 1917: LXIX: 417.

Sedgwick claims that a failing or absent breast milk is usually dependent on too little or improper stimulation of the mammary gland and a too easily discouraged physician or nurse. Premature infants are rarely able to nurse during their early weeks or months, yet breast milk is their salvation, and nearly always may be established and maintained by properly expressing the milk. This should be done at least six times daily. The breast should not be massaged but milked. The gland should be grasped 1 to 2 cm. back of the colored areola and milked toward the nipple. The milk is quite likely to be dried up and the gland injured by the general massage usually given to the entire breast to express the milk. The ducts are immediately behind the areola and are very short; it is upon these only that pressure

need be made. The great common mistake with the nursing babe is to substitute an entire feeding or more with a bottle, instead of weighing the babe before and after feeding and complementing the breast milk the quantity lacking with the bottle.

Regular and fairly frequent stimulation of the breast is absolutely vital to the maintenance of the flow.

He cites cases having gone 60 or 90 days and the flow was re-established by proper manual stimulation and nursing stimulation of the breast.

C. W. W.

Vaccines in Pertussis. Henry W. Cheney, *Illinois M. J.*, 1917: XXXII: 94.

Cheney prefers a polyvalent vaccine, as he believes most cases before they have run long become a mixed infection. He uses much larger doses than originally recommended. For babies one to two years giving one hundred million hypodermically for first two doses and doubling this later. For older children he begins with two and three hundred million, doubling and trebling this in subsequent doses. He gives a dose every three days for five or six injections, which is usually sufficient to obtain results.

No condition of anaphylaxis results, as the vaccine does not sensitize the individual as a foreign serum does. With its prophylactic use he has had no experience, but quotes the 244 cases given vaccine prophylaxis in a children's institution in New York by Alfred Hess. Out of these 21 contracted the disease. Of 75 not receiving the vaccine protection 59 contracted pertussis. He awaits the characteristic whoop before giving the vaccine. He claims improvement in 90% of his cases. The beneficial effects were noted as follows: First, the number and severity of paroxysms is decreased; second, the vomiting soon stops; third, the patients sleep much better; fourth, the disease is much shortened.

His experience is that the disease is shortened 20 to 25 days and complications are practically nil. He quotes that in the series of 1,500 cases at the whooping cough clinic in New York City treated by vaccine there was not a single death.

C. W. W.

Child Welfare and the Prevention of Dental Disease. J. H. Gibbs, *Edinb. M. J.* 1917, N. S., XVIII: 433.

Gibbs states that statistics show that in modern civilized communities 98 per cent of people have caries, whilst the percentage in uncivilized people living naturally runs from 1 to 20 per cent. Caries is essentially a disease of childhood and adolescence. Dental caries and pyorrhea alveolaris are primarily dependent on diet. Omitting the importance of antenatal influences, the feeding of the newly born infant is of great importance from the standpoint of prevention of dental disease. The teeth of bottle-fed infants are not nearly so well calcified as those of breast-fed, hence more prone to caries. The weaning period is another time when gross error is committed in permitting a continuation of a milk diet when solid coarser food is needed. Too much starch, especially finely pulverized, and also sugar, are very poor foods for the teeth. Coarse cereals, ripe fruit and their juices are very good. He claims the average child suffers from carbohydrate poisoning and protein and fat starvation. The pap-fed child quickly becomes a bolter and soon complains if it must chew a crust.

When one compares the diet of civilized races with that of native races, the essential difference is the highly acid native diet due to acid salts or highly pungent from spices, essential oils, etc. These foods call forth an abundance of digestive juices. Incidentally, bringing forth a large secretion of saliva highly alkaline and amylolytic. This alkaline saliva is an ideal mouth wash. A meal should never end with such easily lodgeable and fermentable foods as jam, biscuit or cake. These should be scrubbed off with good crisp or rusk and followed by fresh fruit.

The prevalent use of sweets and chocolate is a fruitful source of dental caries, dyspepsia-pain and ill-health. A tooth brush or dental floss will not prevent dental caries, no matter how carefully used; the only prevention is to leave the mouth at the end of a meal, and especially the last meal of the day, in a natural physiological hygienic state. C. W. W.

ABSTRACTS IN GYNECOLOGY AND OBSTETRICS

The Surgical Methods of Dealing with Pelvic Infections. Thomas S. Cullen, *Surg., Gynec. & Obst.*, 1917: XXV: 134.

Appendix Abscess. During the past ten years the author has always found it possible to remove the appendix at the time the abscess was drained. Such abscesses usually lie between the caecum and the right lateral abdominal wall, covered with a corner of the omentum. To avoid tearing this omental cover, thus freeing pus among the intestines, the omentum should be ligated medianward of the point where it is adherent. Packing may then be placed around and below the still unruptured pus sac. The distal adherent part of the omentum is pulled upon, when the pus escapes. Drawing the caecum away from the abdominal wall now brings the appendix into view. One drain is laid to the floor of the abscess, one to the right renal fossa, and one to the right side of the pelvis.

Pus Tubes. Simple removal is easy. Always remove a wedge of the uterine cornu. When things are hopelessly plastered together, employ Kelly's method of bisecting the uterus.

Vaginal drains are introduced by cutting down upon a clamp introduced, by sight, through the vagina. Where the vaginal vault is board-like or bulging, the proper treatment is vaginal puncture. Do not irrigate such a cavity from below, for fear the pressure will break down protecting adhesions.

Postpuerperal infections give a different history from that of gonorrhoeal cases. Here we find areas of hardening in the broad ligaments. Where these ligaments are alone involved, pelvic drainage is dangerous. Such an operation introduces the infection into a clean Douglas' pouch. Such infections should be handled through an incision above Pupart's ligament, parallel to it. The peritoneum is carefully pushed to one side when it is exposed, but not opened. The layers of the broad ligament are separated till the indurated areas are reached. Probably no pus will be found; just a little serum. But a drain is placed, and recovery is usually prompt.

J. T. S., Jr.

The Abuse of Caesarean Section. J. Whitridge Williams, *Surg., Gynec. & Obst.*, 1917: XXV: 194.

Periods of undue enthusiasm usually precede the establishment of the actual value of a given procedure in the practice of medicine and surgery. It is believed that we are at present going through such a stage in connection with Caesarean section. The operation is abused in two ways: it is employed when not indicated; and when indicated, it is not used at the time of election. Defective obstetrical training, the glamor of the operation, its ease, and an underestimate of its mortality, lead to this abuse. The mortality for Caesarean is fully 10 per cent; much higher than for other abdominal operations. The author has lost but one case that was operated at the time of election, yet his total mortality is 8 per cent.

There is a smoother convalescence if the uterus is removed at the operation. It is an abuse to perform section after the patient has been long in the second stage, or has been frequently examined.

The upper limits of the "absolute" and "relative" pelvic measurements that indicate Caesarean section have been raised. If the test of labor fails

in borderline cases, it is problematic whether or not it is right to risk the life of the mother by Caesarean after she has been in the second stage. Here, pubiotomy offers a chance to save both mother and child. Many now seem to think that the mere diagnosis of a contracted pelvis, no matter of what degree, justifies section. Yet of 200 to 250 contracted pelvises seen annually in the Johns Hopkins clinic, Caesarean section is necessary in not more than 10 to 12 cases.

In placenta previa, Caesarean is justified only when there is severe hemorrhage and a rigid cervix; a very rare combination. With the use of the deRibes balloon, followed by version and extraction, no mother's life has been lost in nine years at Hopkins. Possibly more children are born alive by Caesarean, but many are dead when the cases come to us, and most are premature; so the total saved does not counterbalance the mothers lost.

Vaginal hysterotomy is better than Caesarean for practically all multiparous eclamptics, on account of the better convalescence and the absence of a uterine cicatrix. Occasionally, with a primiparous eclamptic, Caesarean is justifiable.

In neglected abnormal positions, the cases reach us almost surely infected. So Caesarean may save a doubtful child's life, but is very apt to sacrifice the mother. A Porro Caesarean may, however, be justifiable in such a case. In breech and face presentations, Caesarean is unjustifiable.

J. T. S., Jr.

Observations on the Degeneration of Leucocytes in the Urine as a Diagnostic Aid in Tuberculosis of the Urinary Tract in Women.
H. M. N. Wynn, *Johns Hopkins Hosp. Bull.*, 1917: XXVIII: 251.

Colombino claimed that in pyuria cases showing degenerated leucocytes and some red blood cells, a definite diagnosis of tuberculosis can be made. He believed the degeneration due to a specific toxic action of the tuberculous urine. Kelly, Lequeux and others have failed to confirm the specificity of this leucocytic degeneration as proof of tuberculosis.

Tables are presented, showing the findings in 72 cases of pyuria, including 11 of renal tuberculosis. Only 6 of these 11 showed leucocytic degeneration.

The author reaches the following conclusions:

Degenerated leucocytes in the urine are not pathognomonic of tuberculosis of the urinary tract, but a marked degeneration is strongly suggestive of the disease.

The absence of degeneration of leucocytes does not eliminate tuberculosis.

The cytological study of the urine cannot replace the demonstration of tubercle bacilli or animal inoculation as a means of diagnosis; at best it offers presumptive evidence.

J. T. S., Jr.

ABSTRACTS IN DERMATOLOGY

Questions for Study Concerning Syphilis. R. Sabouraud, *Paris Mèd.*, 1917: 18: 369.

The author calls attention to the fact already noted by Alfred Fournier of the frequency of congenital syphilis among children affected with lupus vulgaris. Many cases of congenital syphilis are overlooked for want of a careful examination of the entire body. He lays special stress on a study of the teeth in all such cases and calls attention to a protuberance found on the palatal surface of the upper first molar, claiming it to be specific. Sabouraud feels that all too many ulcers of the leg are treated for something else when they are really specific. He also mentions the fact that

adult congenital luetics often lose their persistent positive Wassermann and then contract a fresh lues. H. N. C.

The Pyodermites (Pus Infections) and Their Treatment in the Ambulance of the Army. Dr. Carle, *Paris Mèd.*, 1917: 18: 376.

In July, 1916, the author saw 664 such cases on his service, of which 468 were cutaneous.

Secondary to the itch.....	165
Staphylococcus folliculitis	122
Impetigos and dermites	107
Medicinal dermatitides	24
Ecthymas legs	20
Sycosis face	13
Voluntary traumatic ulcers.....	8
Other ulcers	5
Erysipelas	4

The author calls attention to the fact that in an ambulance service one has little or no drugs at hand, so they used the following five elements and had wonderful results:

- (a) a liquid—boiled water.
- (b) a medicament—oil of cade.
- (c) a powder—zinc oxid.
- (d) a fatty base—vaseline.
- (e) an antiseptic—tincture of iodin.

The lesions were carefully cleansed, parasites removed, and wet dressings applied; as soon as the inflammation would allow they then used a 20% oil of cade in an ointment containing a high per cent of zinc oxid—even 100%. The tincture of iodin was used on deep infections. H. N. C.

L'Adrenaline Combat L'Iodisme (Adrenaline Treatment of Iodism).

G. Milian, *Paris Mèd.*, 1917: 18: 374.

Milian calls attention to the fact that the symptoms of iodism are like those in intoxication from salvarsan-oedema; coryza, congestion of the conjunctivae and of the buccal, nasal and pharyngeal mucous membranes. These symptoms with salvarsan have been explained on the theory of a vaso-dilatation and they reacted very well to adrenalin. Going on this theory he used adrenalin in two such severe cases of iodism with astonishing results—his dose was 3 mgs. twice a day. He is not sure that the acneiform eruption of iodin is due to the same cause, but feels that it is certainly true in the cases with vasomotor phenomena. H. N. C.

Les Eruptions Provoquées (The Feigned Eruptions). Dr. Milian, *Paris Mèd.*, 1917: 18: 343.

The author is chief of the 24th hospital of Epernay and has had many opportunities of studying artificial skin eruptions among the soldiers. The lesions are found not only among the soldiers in dangerous positions, as before Verdun, but also among men held for long periods in quiet sections of the battle line; in other words, the occupants are tired and desire change. Milian has also seen them in soldiers but recently returned from hospitals and desiring return. The lesions are as a rule found on exposed parts, *e. g.*, the face, backs of hands and legs. They are generally in places conveniently reached by the right hand, *e. g.*, the upper and inner third of the lower leg. The lesions have a tendency to come out over night and instead of showing a gradual progression they spring out all of a sudden. The forms of which he speaks are: pustular dermatitis cases, bullous eruptions, eczematous, like cases of dermatitis, oedemas of a limb from constrictions, false ulcers of the legs, false mucous patches and induced gonorrhoeas.

In the cases of pustular dermatitis the fact that all the pustules are in exactly the same stage makes one suspicious at once. Croton oil and mustard were the principal agents Milian found. In bullous eruptions thapsia was again the factor, especially when used in the form of a plaster. The lesions were all grouped in one spot and thus one could rule out pemphigus at once. Many false ulcers of the legs were seen. They were generally in the upper and inner third of the left leg—truly a strange place for a varicose ulcer, and of course were in this position because it was most easily reached by the right hand. Sometimes the patients feigned a syphilitic ulcer, especially after their return from the hospital for a course of treatment. However, strange to relate, the lesions would not react to salvarsan, so that Milian could easily detect them even when on an old luetic scar. Of course, other signs helped in a differential diagnosis, *i. e.*, one generally finds a positive Wassermann with a luetic ulcer of the leg. Milian has also seen induced patches in the mouth from the burn of a cigarette. They were easy to distinguish from real mucous patches because of their acute inflammatory appearance. They were also seen on the inside of the left cheek just far enough back of the corner of the mouth to be easily reached by a cigarette held in the right hand.

Milian says that many prostitutes with acute gonorrhoeas charge double prices to the men on the chance of transmitting the disease.

In treatment of these cases Milian advises private talks with the patient, apprising him that you want the truth and advising him that you will not make it public if he immediately stops his dissimulation, and this generally suffices. When the man returns to the trenches Milian writes a confidential letter to his captain that it may not happen in the future. Again, with a leg ulcer he sometimes puts a collodion dressing that can't be broken, thus ending the process. Sometimes a severe course is necessary with the patients.

H. N. C.

ABSTRACTS IN OPHTHALMOLOGY

The Effects of Cinematograph Displays Upon the Eyes of Children.

N. Bishop Harman, M. D., *Brit. M. J.*, 1917: I: 219.

In general the effects on the eyes of children do not differ from those experienced by adults, and there are few, if any, adults who do not experience some annoyance. The unpleasant effects associated with the cinematograph exhibition, in so far as they affect the eyes, are due to the following conditions: (1) Glare; (2) flicker; (3) rapidity of motion; (4) concentration of attention; (5) duration of exhibition.

(1) Glare. It is most difficult for the eye to adapt itself to a single light in a dark place. Even though the light be feeble, if the space in which it is exhibited be dark, the light will be relatively intense and consequently irritating to the eyes.

(2) Flicker. This is peculiarly irritating. One form is occasioned by the rapid change of the moving film, while another sort of flicker is produced by defective films in which bright flashes of light occur through scratches and damaged patches.

(3) Rapidity of motion is to some extent connected with the previous defect. That the flicker may be reduced, the films are moved through the machine at a rate greater than the natural rate of progress of the events depicted. This defect is most evident in those scenes which depict movement near at hand.

(4) Concentration. At the cinematograph there is no adjuvant sound which carries on the sense of the scene when the eye is not engaged. For the whole duration of the scene the eye must be fully alert and constantly varying its condition according to the variations of illumination of the screen.

(5) Duration of Exhibition. The shows commonly last from one and a half to three hours. During this time, save for short intervals, the eye and the mind are on the stretch. It is common knowledge with teachers that lessons to be effective must be short, and the shorter the more youthful the child. With a lesson longer than a half hour the attention flags, and if the attention be forced for a longer period than is natural, the nervous effect is increased out of all proportion.

An increasing number of children are referred to eye clinics because of defective vision, who on examination at the clinic are found to be normal. At school they did not pass the test, and at the first examination at the clinic they did not pass the test, but at a later examination the test was satisfactorily passed. Some of these children were in the habit of going to picture shows, and the condition of fatigue at the time of the test was accounted for by this habitual attendance.

The best protection for the child will be secured by the following provisions: (1) The reasonable illumination of all parts of the hall not directly beside the screen. (2) The improvement of the movement of the film so as to reduce flicker, and the withdrawal of films immediately they are damaged. (3) An improvement in taking the picture so as to bring the rate of motion of the objects depicted more nearly to the natural. (4) The increase of the number of intervals in the show, and the interposition of exhibitions other than that of the optical lantern. (5) The limitation of shows for children to one hour, and the prohibition of "repeats." (6) The reservation of the children's seats to the "optimum" position in the hall. This position is one nearly as possible in a line with the center of the screen and as far from the screen as thrice its full height.

With such precautions the indulgence in a show once a week should do no harm to the eyes of a normal child.

R. B. M.

The Effects of Cinematograph Displays Upon the Eyes of Children.

W. B. I. Pollock, M. D., *Glasgow M. J.*, 1917: LXXXVII: 206.

Concomitant strabismus has been found by this author in increased numbers among the youngest children in certain schools. These children were found to be attending cinematograph displays, some of them twice or three times a week. On the other hand, in districts in which the children were not allowed to attend the shows excepting at rare intervals, there was no marked increase in the amount of strabismus cases.

In a number of the older children who were attending cinematographs regularly, hyperaemia of the optic disc was observed, and complaints of eye strain were made.

Attendance upon these exhibitions should be limited to once a month for school children, and the introduction of the cinematograph into school teaching, excepting at rare intervals, is objected to by this author.

R. B. M.

Movie Spectacles. *Ophth. Rec.*, 1917: XXVI: 428.

Dr. F. C. A. Richardson, a scientific and review writer, formerly connected in an editorial capacity with a New York City daily newspaper, was assigned to write up the moving picture show from a scientific and psychological aspect. After spending several months in the collection of his material, during which time he visited all sorts of moving picture shows, he found his vision to be severely affected, and attributed the affection to the flicker of the picture. In order to complete his article he was obliged to continue his quest for material, and conceived the idea of employing the stenopaic principle in spectacles with which to view the pictures, in the hope his visual difficulties might be mitigated. The stenopaic lens consists of an opaque disc in which there is a pin-point aperture, or a very narrow slit. He made the first pair himself, from vulcanite, and the beneficial effects of

these spectacles were so apparent that the idea was communicated to others, with the result that the manufacture of the spectacles was undertaken, and they have been placed upon the market and may be obtained very cheaply.

Worn by navigators, these spectacles are said to enable them to see objects at a greater distance than that at which the same objects were visible when they were not worn. The definition of objects in bright moonlight or in sunlight is said to be increased by this means, and glare effects from the reflection of sunlight from the water are not experienced. The author states that the United States Government has tested the spectacles upon marksmen and upon aviators; that it has been found that the accuracy of the marksmen was materially increased by wearing them, and that it was possible to shoot accurately within two degrees of the sun.

R. B. M.

ABSTRACTS IN LARYNGOLOGY, RHINOLOGY AND OTOTOLOGY

The Ear and the General Practitioner. Fisher and Jones, *N. Y. M. J.*, 1917: CV: 597.

"The object of the paper is to refer only to the common ear conditions encountered every day by the general practitioner." Under diseases of the external ear the authors take up in order impacted cerumen, foreign bodies, eczema and furunculosis. Each is dealt with, and the symptoms, treatment and danger briefly referred to.

Middle ear diseases are divided into the mildly inflammatory chronic type, resulting in gradual changes, and the acute inflammatory or suppurative type. The chief symptoms of the former are increasing deafness and often tinnitus. The acutely inflammatory or suppurative cases are usually seen first by the general practitioner. "Deafness in such cases is usually only incidental," pain being the first and most characteristic symptom. It is important that the general practitioner should realize that these are a dangerous class of cases and that severe complications are likely to occur. Special stress is laid upon the routine examination of the ears in young children as being responsible for an otherwise unaccountable temperature. Attention is also called to the fact that few life insurance companies will assume risk on those who have chronic discharging ears. The head mirror and the tuning fork are considered by the authors as indispensable aids in the diagnosis of middle ear lesions.

The internal ear consists of two portions, the cochlea, which is the organ of hearing, and the vestibule, which is the organ of equilibration. "Affections of the cochlea are made manifest by impaired hearing and noises in the head. Disturbances of the static labyrinth manifest themselves by dizziness, staggering, nausea, vomiting and diarrhoea." The authors lay special stress upon the general practitioner recognizing these latter as due to inner ear involvement and cite case histories to illustrate the dangers resulting from faulty interpretation of the above symptoms.

W. B. C.

Report of a Case of Bilateral Congenital Osseous Atresia of the External Auditory Canal, with Exceptionally Good Functional Result Following Operation. Dr. L. W. Dean and Dr. T. R. Gittins, *Laryngoscope*, 1917: XXVII: 461-473.

Osseous atresia of the external auditory canal occurs, according to Bezold and Siebenmann, once in 2,000 cases. One out of six is bilateral. The typical picture is as follows:

"A small, irregular formed rudiment of cartilage which is covered with skin is on the outside in place of the auricle. There is no entrance into the meatus. The mastoid process usually starts directly behind the glenoid process of the lower jaw. Usually, there are rudiments of two ossicles and no drumhead is present. The antrum of the mastoid is most often quite well developed."

The opinion of Page, who has made a careful study of the literature, is that "cases of defective development of the internal ear are rarely, if ever, found associated with atresia of the external ear in otherwise well developed infants."

The general trend of opinion has been, and still is, against operative interference. Page believes, however, that operation is indicated in practically every case of bilateral atresia which occurs in an otherwise well-formed infant

The case reported by the author is a white male, age 15. The hearing had been poor since birth. The auricles were normal in appearance. Where each external meatus should be was a concavity three (3) millimeters deep on one side and five (5) millimeters on the other. Probing showed bone covered with skin. The hearing for conversational voices was five (5) feet in the right ear and three (3) feet in the left ear. Rotation showed active labyrinths. X-ray showed normal mastoids.

The operation performed on each ear was practically the meato-mastoid operation. Primary skin grafts were used. The end results were excellent. Each canal was one (1) centimeter in diameter and the hearing for conversational voice was forty-eight (48) feet in each ear. C. E. P.

Soup Bone Implant for the Correction of Defects of the Skull and Face.

W. Wayne Babcock, *J. Am. M. Ass.*, 1917: LXIX: 353-355.

The author has used boiled ox or sheep bone as an implant in five (5) cases. The scapula is preferred. The bone, which has been boiled, is re-boiled for an hour in a large quantity of water. It is placed over night in a 1 to 20 phenol solution and again boiled in plain water for one-half hour previous to the operation. The bone is somewhat softened by this process and can be trimmed to the desired shape with heavy scissors. After proper shaping it is perforated with drill holes one-half inch apart and is ready for implanting.

Two (2) of the cases reported by the author were for cranial defects and were successful. The remaining three (3) cases were saddle noses. In two (2) the implant was retained, primary union occurring, and in one (1) the alien bone had to be removed on account of suppuration. C. E. P.

ABSTRACTS IN PATHOLOGY

Serological Examination of School Children. Charles D. Johnson, *Am. J. Syphilis*, 1917: I: 606.

The author has performed Wassermann test upon two hundred school children in St. Louis. He arrives at the conclusion that the results are startling in disclosing a large number of positive results.

The reviewer has performed about 700 similar tests among the various local orphan asylum children, and feels the same way as the author does about the startling results, as I obtained about 25 per cent of positive cases (these were cases which were positive upon repeated examination).

The author obtained 33 per cent of three plus and four plus and 23 per cent of one plus and two plus cases, which makes it appear that at least a third of the children of St. Louis are congenital syphilitics. A. A. E.

Complement Fixation in Syphilis. Loyd Thompson, *Am. J. Syphilis*, 1917: I: 554.

More and more serologists are getting away from the original Wassermann technique—I mean, of course, from the use of the anti-sheep hemolytic system, the majority of the workers having given up the original antigen—the syphilitic liver.

The author reviewing the various modifications, well summarizes the objections to the original technique, the most glaring of which is, of course, the use of the anti-sheep hemolytic system, then there is the use of the inactivated serum, which means that some 25 per cent of antibodies have been removed, then there are several objections, such as the inconvenience of procuring the sheep's blood, the large quantities of the various ingredients, etc.

From the author's review one cannot help admit that the Noguchi modification is by far the best one yet suggested.

The author's own latest modification has failed to impress the reviewer as to forming any advantages over that of Noguchi, as shown in the following table:

Advantages Claimed by Thompson	Compared With Noguchi
1. Does away with errors due to antisheep-amboceptor.	Same.
2. Does away with necessity of keeping sheep.	Same.
3. It uses non-inactivated sera.	Same.
4. It does away with necessity of keeping a guinea pig.	This is not much of an advantage, since the complement has to be titrated; besides, any laboratory must keep guinea pigs for some work.
5. The complement is carefully titrated.	Same.

A. A. E.

Experimental Study of Organization in Lobar Pneumonia. B. S. Kline, M. D., *J. Exper. M.*, 1917: XXVI: 239.

In 1914 Winternitz and Kline observed that in the later stages of lobar pneumonia the circulation in the consolidated portion is poor, and it was inferred that little serum reached the exudation in the alveoli. Hence autolysis of the leucocyte and resolution occurred. These facts suggest that if serum is present in the exudate in sufficient quantities resolution will not occur.

The writer produced pneumonia in dogs by intrabronchial injection of suspension of pneumococci (Group 1) and after intervals of 48 to 72 hours gave daily intra-bronchial injections of sterile dog serum into the involved lobe. After 9 to 18 days, when dogs were killed, 8 out of 12 dogs showed organization of the consolidated area. Control dogs without serum injection showed complete resolution, and with serum injection only the lungs showed no change. Hence he concludes that unresolved lobar pneumonia with organization of exudate depends on the presence of serum in the exudate.

M. L. R.

The Relation of Apical Tuberculosis of Adults to the Focal Tuberculosis of Children. Eugene L. Opie, *J. Exper. M.*, 1917: XXVI: 263.

Fatal tuberculosis of adults and elder children is of the apical type and like second infections is accompanied by involvement of regional lymph nodes. Thus the two types of tuberculosis, focal and apical are distinct. Focal lesions occurring in childhood and found in adults who have apical lesions are usually scarred and healed while the apical lesion is active. The regional lymph nodes are also apt to be scarred because of the old childhood involvement. Apical tuberculosis does not have its greatest incidence in young adult life when the focal lesions of childhood are still relatively fresh, but occur in later life when the focal infections are healed. Also in a large number of cases the apical lesion is in one lung, whereas the focal are in the opposite lung.

M. L. R.

DEPARTMENT OF THERAPEUTICS

Conducted by J. B. McGEE, M. D., Cleveland

Auricular Fibrillation. In the July number of the *American Journal of the Medical Sciences*, Samuel A. Levine presents some clinical considerations on auricular fibrillation. It is a condition in which numerous irregular, very rapid impulses are sent out by the auricles. The auricles do not actually contract, but, on the contrary, remain twitching in diastole. In the great majority of cases it is easily recognized by auscultation at the apex, and palpation of the radial pulse. The absolute arrhythmia heard over the precordium, generally with a rate over 100 (when the patient is first seen), together with a pulse deficit (difference between the apex and radial counts), in a patient with cardiac failure indicate that the auricles are fibrillating. It is quite frequent, and its importance is indicated by the fact that it is generally a permanent irregularity, and if untreated seriously embarrasses the circulation. At the same time it can be said there is no group of cardiac cases that responds so well to proper treatment. As to treatment, the most important aim is to help the heart muscle. The cases which show the transient form of fibrillation do not generally need any treatment, except as indicated by other manifestations, and in pneumonia when the picture becomes most alarming. Those who have persistent auricular fibrillation should be given digitalis to reduce the rapid heart action. There is no better drug for this purpose than digitalis, or strophanthin when more immediate action is desired. Another helpful drug in many of his cases was theocin. In all cases particular attention was paid to procuring comfortable rest during the night. It might hardly seem necessary to emphasize the importance of following the apex-rate in conjunction with the rate of the radial pulse in cases of auricular fibrillation. But this practice is by no means general. These two counts frequently show a marked discrepancy at first, and as the condition of the patient improves the two rates tend to coincide. In fact, it frequently happened that as the patient was improving and the apex-rate failing, the radial rate was increasing, *i. e.*, there were more beats strong enough to reach the wrist with fewer impulses arising in the ventricles. A slow radial pulse is of no significance, for it may indicate either that only a portion of the many beats are strong enough to reach the radial artery, or that the heart-beat is actually slow. A slow apex-beat is always significant. In most of his cases the heart rate responded quite readily to the treatment, and hand in hand there resulted an improvement in the clinical condition. There were several in whom the heart rate was slowed without an accompanying improvement in the symptoms and in a few neither the rate nor the clinical picture was affected.

Digitalis: Arthur E. Cushing, in the *Lancet* for June 9th, contributes an article on the method of action of digitalis in auricular fibrillation. Under suitable quantities of digitalis, in this condition, the pulse becomes slower and the beats are less unequal in strength. If the drug is pushed the pulse may run down to about 40 and become quite regular and equal. And as the pulse falls in rate the general condition improves in the most unmistakable way, breathlessness, dropsy and lividity disappearing rapidly. The rate of the blood flow through the peripheral vessels has been measured by Stewart and Scott, who found it quickened as the pulse falls in this condition. He states that we have two separate reactions to the digitalis group—one which is seen in patients with normal rhythm, and in animals with the heart *in situ*, and in which the slowing is inhibitory in character; the other seen in auricular fibrillation, both in man and in the perfused mammalian heart, when the slowing arises from direct action on the heart tissue. The anomalous reaction seen in the last case is obviously not caused by the auricular fibrillation, for it does not occur in animals'

hearts *in situ*, and in addition an analogous change is seen in the perfused heart when no fibrillation is present. Some change in the condition of the heart quite apart from the fibrillation must therefore be the underlying ground for the change in reaction. The view he presents is that the anomalous reaction of digitalis arises from malnutrition of the heart, primarily, but that this state of malnutrition is exaggerated by the demands made on the heart in auricular fibrillation, which thus contributes to the debility and leads to the anomalous reaction secondarily. In the action of digitalis in auricular fibrillation the effective action is the blocking of impulses from the auricle. Another result of digitalis on the animal heart is the increase in strength of contractions. Does this play no part in the improved efficiency of the heart? This cannot be answered at present, as we have no means of measuring accurately the contractions of the human heart. Undoubtedly the movement is stronger, but this may be due to the slower beat, which allows of a better recovery in the period of rest.

Hypodermoclysis: The June number of the *Therapeutic Gazette* considers editorially the question of hypodermoclysis in the diarrhea of children. The assertion is made that it is scarcely more than twenty years since hypodermoclysis became generally known to the profession, and it is a fair statement that it is not so frequently resorted to for the relief of any type of case today as it was ten years after its introduction. This is due in part to the fact that its novelty has worn off, to the fact that certain contraindications, like dropsy or pulmonary edema, forbid its use, to the discomfort which it causes many patients, and last of all to the introduction of the Murphy drip, which, however uncomfortable it may be, nevertheless causes less annoyance than the injection of a considerable quantity of salt solution under the skin. In childhood both the Murphy drip and hypodermoclysis are difficult to employ, and there is a question as to exactly how advantageous its employment is. Certain conclusions obtained by Holt, Courtney and Fales as to the excretion of sodium chloride and water when injected subcutaneously, would seem to at least in part indicate its value. Studying cases of diarrhea during infancy, they showed that there was a great loss of salts, especially the more soluble ones, and noting a very definite gain in weight after the use of hypodermoclysis, the question was as to whether this was solely due to the increased liquid provided or to the retention of the salt. After preliminary use of other solutions the ordinary salt solution was resorted to. Holt and his collaborators found that protracted vomiting robbed the body of both fluid and salts, as did diarrhea, and that a considerable portion of the salt is usually retained for two or three days, sometimes for a longer period, the retention of the water following the retention of the salt. In normal children the greater part of the water is apparently excreted in the first twenty-four hours, and the salt often escapes in great part in the first six hours, which emphasizes the fact already known, namely, that the body speedily eliminates salts for which it has no use, provided that the kidneys are not so impaired in function as to make this impossible, when many salts, notably potassium salts, otherwise innocuous, become hurtful.

Acidosis: In the *Practitioner* for May, Fergus Hewat treats of acidosis, especially with reference to children. As to treatment, he states that when aceto-acetic acid is detected in the urine, two obvious indications arise for treatment, viz: 1. To stop the formation of the abnormal acids. 2. To neutralize the acids already present. In children the condition may be met with in connection with some very trivial illness, or it may be present with very urgent symptoms. In an ordinary so-called bilious attack, treatment is simple. A saline purge or vegetable laxative and an enema are given. An ordinary soap and water enema followed by a saline "wash-out" is perhaps the best method of relieving the large intestine. This is fol-

lowed by a simple alkaline mixture and dextrose added to the diet, which may be albumin water or whey for 24 to 36 hours. Later oatmeal gruel is very useful. In severe cases, such as cyclic vomiting, in which there is very intractable vomiting, more drastic methods may be employed. As the child is unable to retain any food, nothing can be given by the mouth. The lower bowel must be unloaded and a glucose solution of 5 to 10 per cent slowly introduced by means of a long tube; sodic-bicarbonate may be dissolved in this. Warm water well sweetened with sodic-bicarbonate in ten-grain doses is given by the mouth; if this is vomited it should be frequently repeated, and hot fomentations applied to the abdomen. As soon as vomiting abates, give albumin water with dextrose in it. In the diet of infants he has found Nestle's milk successful when others have failed. It must be remembered, however, that such milk is deficient in anti-scorbutic properties, and cannot be too long continued. There is at present a view among some authorities that too much has been made of the acidosis question; on the other hand, it seems to supply a very definite explanation for many obscure phenomena, more particularly in treating children. We realize full well that we are only on the fringe of this question, but the subject appears to be of much practical importance, and by testing the urine early and often for aceto-acetic acid in obscure and trivial yet puzzling cases of disease in children one may obtain a clear guide to further treatment, and so ward off severe symptoms.

Dichloramin-T.: In the *Journal A. M. A.* for July 7th, H. D. Dakin, Walter Estell Lee, Joshua E. Sweet, Byron M. Hendrix and Robert G. Lecomte present a report on dichloramin-T. (toluene-para-sulphondi-chloramin) in the treatment of infected wounds. The perfect germicide should meet two simple requirements: it must kill all parasitic life, while causing no harm to any cell of the living body. This new agent fills these indications, and the technic of its application is simplicity itself. Their conclusions are—in comparing the practical surgical value of dichloramin-T. with aqueous hypochlorite solutions, in the treatment of infected wounds, they believe the findings warrant these statements: 1. Dichloramin-T. is a nonirritating synthetic germicide, and corresponds to the antiseptic chloramin substances found in minute quantities when nascent chlorin of the aqueous hypochlorite solutions is brought into contact with the exudate of suppurating wounds. 2. Dichloramin-T. can be used in strengths of from twenty to forty times greater than is possible with the hypochlorites, and in an oily solution which makes possible the slow elaboration of the germicides over a period of from eighteen to twenty-four hours, instead of a rapid disappearance in from 30 minutes to one hour, as with the hydrochlorites. 3. Its use is as simple as the application of the tincture of iodine, and they see no reason why it cannot replace iodine as a primary dressing. In their experience it is just as effective as a germicide and is without the destructive effect on the tissue cells. Using it in this way at the primary operation in seven wounds involving soft tissues, tendons, joints and bones, they have not failed to have primary union. One case, a compound fracture of metacarpal with several extension tendons, did not receive treatment till three hours after the injury. 4. The chlorin in dichloramin-T., as in the hypochlorites, has the power of dissolving dead tissues. Hemorrhage therefore must be stopped by ligation, else the clot will dissolve and secondary hemorrhage may follow. 5. One should not depend on a chemical agent for that which can be done by mechanical means. At the best these chemical germicides can react only on the bacteria with which they actually come in contact, which means a very superficial process. Therefore at the primary operation all infected tissue, foci and devitalized tissues must be removed, when possible, by surgical procedures. Finally, adequate drainage, dependent if indicated, must be provided.

Cardiac Arrhythmia: C. L. Palmer, in the *New York Medical Journal* for July 14th, states that cardiac arrhythmia is probably the most puzzling circulatory condition with which the general practitioner is confronted. The treatment can be divided into general and specific. The general treatment involves a careful study of the patient's psychological makeup, his diet, his activities, etc. The diet should be governed by extent of complicating lesions, as nephritis and gastrointestinal conditions, permitting foods which maintain nutrition but still keep him comfortable and with the least possible degree of intoxication. The activities should be governed by the ability of the circulatory apparatus to compensate for certain forms of exercise or work. The specific treatment depends on the proper use of digitalis, atropine, strophanthus and anti-luetic treatment, if indicated. Digitalis in some form is indicated in nearly all the cardiac arrhythmias, in which the pulse rate is rapid and signs of lost compensation exist. It should be pushed until a marked slowing of the pulse is accomplished, and if one preparation does not seem to do this, another one, or even a fresh preparation of the same one, should be tried. Atropine is indicated in cases in which the vagus nerve seems to be involved, due to various disturbances, such as gastrointestinal conditions which produce a reflex effect or various intoxications which might set up a vagus neuritis, so altering the flow of stimuli passing through the vagus nerve to the heart. In fact, atropin, alone or combined with digitalis, may be tried and in some instances will produce effects in cases in which no clinical condition is apparent indicating its use. Strophanthin seems to have its best effect when used intravenously in the dose of 0.02 to 0.01 grain. Remarkable relief in this condition has been reported by this treatment. Finally, lues should never be overlooked in these cases, and if demonstrated, or even suspected, appropriate treatment should be instituted.

Practical Therapy: Samuel E. Earp, in the *Medical Summary* for June, considers practical and tried therapy. He states that formulae that have stood the test, whether they act as a palliative or curative agent, always have an important bearing and oftentimes are more welcome to the reader without verbose attachments. He presents a number of these which he has found efficacious both in private and hospital practice. In functional derangements of the liver with engorgements elsewhere, with tinted or muddy skin, and constipation, he keeps the bowels open with Dorsey's magnesia mixture, which contains sulphate of magnesia and aromatic sulphuric acid. He then gives:

Rx. Tr. nucis vomicae.....	4 drams
Acidi nitromuriat. dil.....	4 drams
Tr. Cinchonae Co. q. s. ft.....	4 ounces
M Sig.—One teas.	

M Sig. One teaspoonful (glass spoon) in a tumbler half full of water three times a day before meals. To protect the teeth, wash the oral cavity with hydrate of magnesia before and after taking. In corrosive sublimate poisoning he advises in addition to the routine treatment, 5 grains of methylene blue and 10 grains of urotropin, every four hours. In leg ulcers of old people he uses, when skin grafting or substitutes are not used, a warm boric acid solution, dilute liquor antisepticus, or Dobell's or Burow's solution, diluted, and afterwards a prescription of:

Rx. Ichthyol	2 drams
Bals. Peru	2 drams
Ung. zinc oxid benz. ad.....	2 ounces

M Sig. Apply twice daily to ulcer, and keep leg elevated and at rest. He also advises scarlet red. For hot fomentations he uses thin sections of

sponge, 8 x 10 inches, dipped in hot water or diluted vinegar, and then cover with hot water bottle. For dry heat he thinks highly of the little Japanese stove, in plush, which burns punk. The stove costs 25 cents and the punk one cent each. It will smolder and hold heat 24 hours, unchanged. Pruritus can often be relieved by equal parts of milk of magnesia and liquid petrolatum with the addition of Sig. antisepticus alkalinus. It should be well shaken before using. Diluted Burow's solution sometimes acts well, but as a rule watery solutions are of little avail. In infectious diseases with a high temperature where the bath is not well borne, and if the heart is strong and in the early part of the disease, he advises the local use of ugaicol 20 minims and glycerin 40 minims. This is applied after shaving hair from the back or abdomen and covered with oiled silk or waxed paper, used once a day or as needed. In bronchial asthma he prefers the ammonium iodide to other iodides. He believes that we should reclaim the tinctures of aconite and veratrum, and there seems at present a tendency in this direction, notably in the fevers of childhood. In follicular tonsillitis he prefers locally with a camel's hair brush.

Rx. Zinci sulpho-carbolate	15 grains
Glycerin	4 drams
Liq. antisepticus alkalinus	4 drams

M Sig.—Apply locally.

For the "old people's heart," those with an intermittent pulse and irregular manifestations, he finds sparteine sulphate in one-grain doses of great service. He gives it 2 to 4 times a day and can be given with digitalis if desired. The syrup of iodide of iron is his favorite in enlarged cervical or inguinal glands and locally an ointment of iodide of lead with lanoline and petrolatum.

NEW AND NONOFFICIAL REMEDIES

Hay Fever Pollenin Spring—Mulford.—A liquid obtained by extracting the protein of the pollen of rye, timothy, orchard grass, sweet vernal grass, and red top grass and standardizing the solution to a definite protein content. This pollen extract is said to be useful for the prevention and treatment of spring "hay fever." It is supplied in a four-syringe package containing increasing doses of pollen protein and in a one-syringe package containing the maximum dose. The H. K. Mulford Co., Philadelphia.

Hay Fever Pollenin Fall—Mulford.—A liquid obtained by extracting the protein of the pollen of ragweed, golden rod and maize and standardizing the extract to a definite protein content. This pollen extract is said to be of value in the prevention and treatment of fall "hay fever." It is supplied in four-syringe packages containing increasing doses of pollen protein and in a one-syringe package containing the maximum dose. The H. K. Mulford Co., Philadelphia.

Borcherdt's Malt Olive.—A liquid stated to be composed of olive oil 20 per cent, glycerin 10 per cent and Borcherdt's malt extract 70 per cent. The Borcherdt Malt Extract Co., Chicago.

Citresia.—Magnesium acid citrate, the hydrated acid magnesium salt of citric acid. A colorless salt, very soluble in water and having a pleasant acid taste. It may be administered in place of solution of magnesium citrate by dissolving 25 Gm. in 25 Cc. syrup of citric acid and 125 Cc. water. Horace North, New York.

Pasteur. Antirabic Preventive Treatment (Harris Modification).—An antirabic vaccine prepared from brains and spinal cords of rabbits, dead or fixed virus rabies infection, and standardized by the method of Harris. One dose is given for a period of fourteen days. Each dose is sent out separately. Eli Lilly & Co., Indianapolis, Ind. (*Jour. A. M. A.*, July 7, 1917, p. 39).

Acetylsalicylic Acid, M. C. W.—A brand of acetylsalicylic acid complying with the standards of New and Nonofficial Remedies. Mallinckrodt Chemical Works, St. Louis (*Jour. A. M. A.*, July 21, 1917, p. 199).

During July the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Nonofficial Remedies:

The Diarsenol Company, Limited:
Neodiarsenol.

Hoffman-LaRoche Chemical Works:
Thiocol-Roche.
Syrup Thiocol-Roche.
Thiocol-Roche Tablets.

Mallinckrodt Chemical Works:
Acetylsalicylic Acid, M. C. W.

H. K. Mulford Company:
Concentrated Solution Sodium Hypochlorite-Mulford.

The Academy of Medicine of Cleveland

COUNCIL MEETING

At a meeting of the Council of the Academy of Medicine held Tuesday, June 26, 1917, at the University Club, the following members were present: the President, Dr. R. K. Updegraff, in the chair; Drs. Bernstein, Bruner, Bunts, Follansbee, Klaus, Weir, Eddy, Lichty and J. E. Tuckerman.

The minutes of the last meeting were read and approved.

On motion it was decided not to hold an outing this year.

The matter of Dr. Corslene, referred to the Academy at the May meeting, was considered. Dr. Follansbee moved that the Secretary write to the Surgeon-General at Washington and to the Committee on Medical Defense of the American Medical Association calling attention to the record of Dr. J. E. Corslene, forwarding therewith exhibits showing the nature of his activities while located in Cleveland, and protesting against the appointment of an individual with such a professional record to a position of responsibility.

The name of the following applicant was ordered published:

Theron S. Jackson.

The names of the following applicants were ordered published subject to determination that they had complied with the provisions of the Constitution upon eligibility.

E. V. Bishop, N. T. B. Nobles.

Dr. Updegraff asked to add the name of N. M. Jones to the special committee of which Dr. Lichty is chairman. Request granted.

Dr. Lichty discussed the methods by which certain cities in New York and Pennsylvania are endeavoring to safeguard the practice of those who are in military service. He stated that the problem was an extremely difficult one to handle, but felt that some provisions should be made if possible. Dr. Bunts spoke of a method proposed in Toledo. On motion by Dr. Weir, seconded by Dr. Follansbee, the committee was authorized to formulate a plan and given power to act.

On motion the Secretary was directed to act for the Civic Committee until Dr. Sanford's return.

On motion the President was authorized to appoint a special committee to be known as a Grievance and Suggestion Committee. The President appointed Dr. Follansbee as chairman with power to fill his committee.

Dr. Updegraff reported briefly upon the questionnaire sent out to the members of the Academy by the Auxiliary Medical Defense Committee. Practically all of the members made reply to the inquiry. One or two replies showed a misunderstanding of the nature of the questionnaire. The majority were answered in full. Particular attention was called to the reply of Dr. J. C. Fritch.

On motion by Dr. Bunts, the Secretary was directed to write Dr. Fritch that the Council would accept his resignation without further action if he still desires to resign.

Dr. Lichty called attention to the fact that the Union County Medical Society expected to hold a meeting in Cleveland sometime in August.

At the meeting of the Council of the Academy of Medicine held Tuesday, July 31, 1917, at the University Club, the following members were present: the President, Dr. R. K. Updegraff, in the chair; Drs. Bruner, Follansbee, Klaus, Lenhart, Selzer, Eddy, and J. E. Tuckerman, and by invitation Drs. M. J. Lichty, A. Peskind and H. H. Jones.

The minutes of last meeting were read and approved.

On motion the name of Dr. D. W. Stevenson, Akron, Ohio, was ordered published.

A communication from the Consolidated Commercial and Publishing Company asking the endorsement of a proposed directory was read. After discussion the Secretary was directed by motion to reply that, while it was a perfectly proper commercial enterprise, the Academy could not endorse it, because it clearly would be of no value to physicians.

The special business before the Council was then taken up. Members of the committee to devise ways and means whereby the practice of members absent in active service of their country will be conserved were present as follows: the chairman, Dr. Lichty, and Drs. A. Peskind and H. H. Jones.

Dr. Lichty gave a general sketch of the deliberations of the committee. Dr. A. Peskind emphasized the difficulty of conserving practice except by agreement between individual and individual, and stated that in his opinion the important thing was to establish a fund to be operated as a mutual benefit and loan fund for the dependents of physicians in service. Drs. Lichty, Klaus and Jones emphasized the need for collective and individual efforts to conserve the practice of those in service. Drs. Eddy and Selzer cited the experience of their particular organizations in this matter. Drs. Lenhart, Follansbee, Updegraff and others expressed themselves as wishing to have the committee continue its deliberations and embody both plans. Dr. Lichty requested that the committee be definitely instructed.

On motion by Dr. Bruner, the committee was continued and enlarged, additional committeemen to be appointed by the President, and the committee was requested to perfect a plan by which both the practice of individuals might be conserved and a mutual benefit fund be created.

BOOK REVIEWS

Dr. Lyman Spalding. The originator of the United States Pharmacopoeia. Co-laborer with Dr. Nathan Smith in the founding of the Dartmouth Medical College, and its first chemical lecturer; President and Professor of Anatomy and Surgery of the College of Physicians and Surgeons of the Western District, at Fairfield, N. Y. By his grandson, Dr. James Alfred Spalding, Boston. W. M. Leonard, Publisher, 1916. Price, \$3.50.

The biography of Dr. Spalding forms a most interesting volume. It sets forth his professional life, his ability as anatomist and surgeon and versatility as a teacher. His ready acceptance and use of vaccination is mentioned and the work contains references to, and reminiscences of, the

early leaders of the profession, as Rush, Physick, Dorsey, Wistar, Dewees and others of almost equal note. His most important work from the standpoint of the profession was the inception of the National Pharmacopoeia. An even one hundred years have now elapsed since he proposed its formation in 1817, and three years later the first edition was published and well received by the profession. This edition contained 274 pages, on paper about 10 by 6 inches. Our latest edition, recently published, shows, notwithstanding its deletions, 728 pages. Dr. Spalding's efforts in the production of the initial edition, with sketches of collateral aid, are detailed in an interesting manner. It is an admirable biography, and will well repay perusal.

J. B. McG.

Some Personal Recollections of Dr. Janeway. By James Bayard Clark. G. P. Putnam's Sons, New York and London, 1917. Price, \$1.00.

Dr. Clark has written with a delightful personal touch a tribute to Dr. Janeway. The author's relations with Dr. Janeway were close—giving him opportunity to study the man. Every physician should have a guiding star—a splendid life to study and emulate—and Dr. Janeway's career may well be chosen as the physician's ideal. This small volume may be read and re-read with pleasure and retained as a sort of *vade mecum*.

H. S. F.

Diseases of the Stomach, Intestines and Pancreas. By Robert Coleman Kemp, M. D. Third Edition, Revised, with 438 illustrations. W. B. Saunders Company, Philadelphia and London, 1917. Price, \$7.00

The third edition of this valuable work appears with most of the advances in the field of gastro-enterology added. The author is to be commended for his positive statements and criticisms of the newer methods. It is interesting to note that the volume contains no mention of the macroscopic and microscopic examination of the duodenal contents and has omitted the fact that other causes exist for protozoan dysentery than the amoeba histolytica. It is pleasing to note that the older nomenclature in gastric disease is passing. As a large reference work it may be recommended.

H. S. F.

Modern Dietetics. Lulu Graves, Dietitian Lakeside Hospital, Cleveland. The Modern Hospital Publishing Co., 1917. Price, \$2.00.

Mendel in his introduction to Miss Graves' new volume says: "To the student of nutrition it seems as if one feature of hospital service has been unduly neglected, so that it lags behind the progress in this branch of physiology. Dietetics in the hospital, as in other institutions, has not received the recognition which it deserves both as an essential to the management of the patients and as a scheme in the field of treatment . . . the new contributions—the energy factors, the calorie idea, the specific features of diet and its culinary aspects, the relation of dietary components to the alimentary responses, etc.—have been slow in finding their way into the rigid routine of the average American hospital." Because Miss Graves has recognized the need of a volume to correlate the science with the application and art of hospital dietetics she has written this volume. Chapter one considers the managing of the hospital commissary. Judicious buying, storage and care, scientific preparation and distribution are carefully discussed. In chapter two the general principles of correct diet are reviewed. An excellent discussion of milk is found in chapter three—regarding the source of supply, preservation, food value, and preparation. In the following chapter butter and its substitutes are discussed. Chapter five includes a critical survey of vegetables in the dietary. A most interesting summarizing of cereals, legumes, and breakfast foods is found in chapter six—most enlightening at this period when critical examinations of these foods are being made. Following this the subject of fruits—cooked, raw, canned and dried—is considered.

The why and wherefore of coffee, tea, cocoa and chocolate are brought out in chapter eight, together with their places and limitations in the diet.

The selection of poultry—ways of judging and estimating value—follow in a most interesting fashion. Eggs which are so widely used in the diets of invalids are considered in chapter ten. Much has been said for and against the egg, but the fact remains that it is an excellent means of giving protein and fat to the patient. How few of us know how to cook an egg properly. "Water should not be allowed to boil while the egg is in it, whether the egg is being cooked in the shell or out of it (poached)." This chapter is most excellent—one might suggest the role of the egg in the high calorie diets of prolonged infections (typhoid, tuberculosis), exophthalmic goitre and diabetes.

Meats are critically surveyed in chapter eleven, and the popular fads as to red and white meats, the value of meat extracts and juices, etc., are discussed. The rationale of special diets in diseases are next considered and the principles outlined. In the diet for certain nephritics eggs may well be added to the diet. To these might have been added the diets in tuberculosis and Grave's disease. Chapter fourteen contains discussions of the pertinent problems arising daily in hospital life; feeding different types of patients, employes, etc., menus and all methods of serving. Miss Graves not only states the question, but also gives the excellent solutions worked out in her experience. The value of the diet training for nurses is emphasized. "Feeding Various Institutions" is the title of chapter fifteen. Of especial interest is the discussion of the feeding of employees of large industries. A series of diets worked out at the National Lamp Works of Cleveland with their caloric equivalents forms a valuable addition. Methods of preparing the foods mentioned are given in detail.

A most important department of the modern hospital is the training school work in dietetics. This matter is amply considered by Miss Graves, who has had wide experience in this field. The efficient nurse must know the why and wherefore of food and must know how to intelligently prepare it.

The three remaining chapters include diets, methods of food preparation and composition, and tables of caloric equivalents. This volume may be profitably read by physicians and nurses, particularly by those who are in close contact with institutions. It should be a working manual in all hospitals. That this book satisfies a desire—that it inspires the dietitian and director of institutional feeding, is most evident. One cannot over-emphasize the need of greater precision in diet, both in the home and in the hospital. Miss Graves is to be congratulated in presenting this work. The publishers have put the manuscript in a most acceptable and practical form.

H. S. F.

Diseases of the Stomach—A Text-book for Practitioners and Students. By Max Einhorn, M. D., Professor of Medicine at the New York Post-Graduate Medical School and Hospital; Visiting Physician to the German Hospital. Sixth Revised and Enlarged Edition. William Wood & Co., New York, 1917. Price, \$4.00.

The sixth edition of this excellent work has been enlarged and greatly improved. Dr. Einhorn has a reliable and well written treatise on this important subject of critical study of practice and literature. The work is not merely a revision of old works with new material added—it narrates the author's own experiences, together with a limited review of the newer methods (many of which are the author's invention). The work can be heartily recommended as a most practical manual and reference work. H. S. F.

The Medical Clinics of North America, Vol. 1, No. 1, 1917. W. B. Saunders Company, Philadelphia and London.

The new series is a broadening of the publication formerly known as *The Medical Clinics of Chicago*. As the name implies, the various medical

centers of North America will be represented during the six numbers of the coming year. In the reviewer's mind the new idea is most excellent and the fact that this series will bring to thousands of readers the messages of the prominent teachers of this land is more than justification for its appearance. No physician can plead his inability to spend time or money to visit the teaching centers of America—he may have them brought to his study bi-monthly. The first number is from Johns Hopkins Hospital. Dr. Theodore C. Janeway gives three clinics—of special interest is the discussion of a case of postural albuminuria. Dr. Janeway has the gift of imparting to his readers the message in a delightful and witty manner. Dr. Barker gives a complete discussion of a case of meningitis; in a second clinic he presents two cases of fibrillation of muscular tissue—atrial fibrillation, and progressive muscular atrophy. Dr. Herman Mosenthal talks on "Essential Hypertension" and "The Dietetic Treatment of Diabetes Mellitus." The latter is handled in a very practical manner—most useful to the practitioner. Dr. Thomas Fitcher has a case of acromegaly, and later presents a patient with combined scleroderma, Raynaud's disease, and chronic arthritis.

Dr. Hamman's presentation of the "Clinical Aspects of Hypertension" is most enjoyable. The volume is completed by gastro-intestinal notes of Dr. Thomas R. Brown. The publishers are to be congratulated in broadening the field of their publication and in the excellence of their performance. This is a practical work whose value is not limited to any group of men. Success is assured.

H. S. F.

ACKNOWLEDGMENTS

The Medical Clinics of North America (The John Hopkins Hospital Number), July, 1917. Octavo of 193 pages, 14 Illustrations. Published Bi-Monthly by W. B. Saunders Company, Philadelphia. Price, \$10.00.

Manual of the Diseases of the Eye, for Students and General Practitioners. By Charles H. May, M. D., Director and Visiting Surgeon Eye Service, Bellevue Hospital, New York; Attending Ophthalmologist to the French Hospital, to the Italian Hospital, New York, and to the Monmouth Memorial Hospital; Formerly Chief of Clinic and Instructor in Ophthalmology, College of Physicians and Surgeons, Medical Department, Columbia University, New York. Ninth Edition, Revised. 377 Original Illustrations, including 22 Plates, with 71 Colored Figures. William Wood & Company, New York, 1917. Price, \$2.50.

Handbook of Gynecology for Students and Practitioners. By Henry Foster Lewis, A. B., M. D., Professor and Head of Department of Obstetrics and Gynecology in Loyola University School of Medicine; Chief of Obstetric Staff of Cook County Hospital; Fellow and Ex-President of the Chicago Gynecological Society; Late Assistant Professor of Obstetrics and Gynecology in Rush Medical College (in affiliation with the University of Chicago), and Alfred De Roulet, B. Sc., M. S., M. D., Professor of Gynecology in Loyola University School of Medicine; Attending Gynecologist to the House of the Good Shepherd, and to St. Bernard's Hospital; Obstetrician and Chief of Staff of St. Margaret's Home and Hospital. 177 Illustrations. C. V. Mosby Company, St. Louis, 1917. Price, \$4.00.

Modern Dietetics Feeding the Sick in Hospitals and Home, with Some Studies on Feeding Well People. By Lulu Graves, Dietitian Lakeside Hospital, Cleveland. The Modern Hospital Publishing Co., St. Louis, 1917. Price, \$2.00.

Department of Commerce, Bureau of the Census, Sam L. Rogers, Director Mortality Statistics, 1915. Sixteenth Annual Report, Department of Commerce, U. S. of America. Washington, Government Printing Office, 1917.

MEDICAL NEWS

War Meeting for Health Officers.—A war meeting will be held at Washington, D. C., October 17-20, 1917, by the American Public Health Association. This will replace the annual meeting which was to be held at New Orleans, La., December 4-7, 1917.

The papers and conferences will deal largely with the health problems created by the Great War—the food supply, communicable diseases among soldiers, war and venereal disease, war and the health of the civil population, etc.

President Wilson has said: "It not an army we must shape and train for war; it is a nation." Go to the Washington meeting; then come back and do your bit!

Washington will be crowded and those interested are urged to reserve hotel accommodations at once. It will be easy to cancel reservations; but it may be impossible to obtain rooms at the last moment. Any hotel or railroad can give a list of Washington hotels.

Preliminary programs will be automatically mailed to all members of the A. P. H. A. about September 15th. Non-members may receive them free by writing to The American Public Health Association, 128 Massachusetts, Ave., Boston, Mass.

Mortality from Tuberculosis.—More accurate and definite statements of the occupations of decedents should be written upon death certificates. Until this is done, mortality statistics by occupations will continue to be unsatisfactory.

The Bureau of the Census is planning for the near future a monograph on tuberculosis covering the calendar year 1918. How much more valuable this monograph will be if it is possible to show accurately the occupations of decedents.

As a physician you appreciate the importance of such statistics. As a physician you are by education better qualified than the ordinary informant to understand a proper statement of occupation.

Will you not, therefore, take pains to see that the occupation items upon each one of your death certificates are properly supplied?

To make this work of greater value we ask the co-operation of every Cleveland physician to the extent of carefully recording or supervising the statements of occupations upon the death certificates during that year.

Portland Chamber of Commerce, Bureau of Publicity and Conventions.—To further enhance the rating of Portland, Oregon, the Board of Health is making use of the card system for informing patrons of the cleanliness of the various shops they patronize.

A store handling food products of any kind is required to display an "A" card if its sanitation averages 90 per cent or more, as governed by the rules of the Health Board. "B" indicates that the methods of the shop are only up to 80 per cent, and "C" covers anything under 80 per cent.

The card must be displayed in such a place that every patron of the shop may see it, and frequent inspections by officers of the city cause this requirement to be obeyed.

Portland is very jealous of her rating as the second healthiest city in the United States, and is doing everything within reason to raise the rating. It is believed that her temperate zone climate and purest of pure water will be materially aided in giving Portland the boost she craves.

A very noticeable improvement in all shops has been noticed since they have been required to advertise the degree of sanitation they maintain. Each

merchant seems to be now anxious to get an "A" rating. Some merchants are advertising the fact that their shops rate approximately 100 per cent clean.

United States Food Administration.—The United States Food Administration announces the creation of an Advisory Committee on Alimentation, the purpose of which is to gain the active co-operation of experts in the determination of policies of food control from the standpoint of the science of nutrition. The committee consists of C. L. Alsberg, Russell H. Chittenden, C. F. Langworthy, Graham Lusk, LaFayette B. Mendel, and E. V. McCollum.

Dr. Alsberg is Chief of the Bureau of Chemistry, Department of Agriculture, and as such is in charge of the administration of the Pure Food Law. Throughout his term of office in this position, six years, the administration of this exceedingly important department has been carried out with distinguished ability, with fidelity to the highest interests of the consumer, and in accordance with a policy of constructive development of the industries devoted to and related to the production of foodstuffs.

Prof. Chittenden is Director of the Sheffield Scientific School of Yale University and is regarded as the dean of American physiological chemists. Throughout his nearly 40 years of activity in research, Dr. Chittenden has devoted his largest attention to the problems of human nutrition, in particular to the metabolism of protein. His views concerning the adequacy of smaller amounts of protein in the diet than were customary in Anglo-Saxon countries have gradually received recognition and his recent books on physiological economy in nutrition represent an advance expression of this point of view.

Dr. Langworthy has been for many years the head of the office of Home Economics of the Department of Agriculture. Dr. Langworthy was one of the earlier students of nutrition in our country, having been associated with Atwater in the early days of the history of the calorimeter in the United States, and many of the basal analyses of foodstuffs rest upon his investigations. Dr. Langworthy has carried through and supervised a large number of studies of regional diets through which our knowledge of the food habits of different sections have been greatly enlarged. In recent years Dr. Langworthy has devoted his attention to the development of the utilization of foodstuffs within the home, and his name is thus familiar to the majority of American housewives.

Dr. Lusk is Professor of Physiology in Cornell University Medical College, New York City. A product of the school of Voit and Rudner, Dr. Lusk has devoted the past 20 years to the investigation of the fundamental problems of human nutrition, particularly in the relations of food needs and work. The facility of Dr. Lusk in the exposition of the intricacies of his subject is well illustrated by the fact that he is at once the author of a successful book written for scientists and an unusually happy presentation of the subject in primer form for the layman.

Dr. McCollum, at present a Professor in the Department of Agriculture in the University of Wisconsin, has accepted a call to Johns Hopkins University to be the first Professor of Bio-Chemistry in a newly established department devoted to that subject. Dr. McCollum has executed within the past 10 years fundamental researches dealing with the relationship, in animals and men, of proteins of different sources and also of the important, though but recently discovered, efficiency factors in nutrition, whose absence results in deficiency diseases that are now the subject of great attention and active research in medicine.

Dr. Mendel is Professor of Physiological Chemistry in Yale University. In association with Osborne of the same university, Dr. Mendel has for years been engaged in a comprehensive research on protein metabolism in its relations to growth and health, carried out under the auspices of the Car-

negie Institution of Washington. Dr. Mendel has for a long time officiated in an advisory capacity in the Council of Foods of the American Medical Association and possesses wide knowledge in the practical affairs of nutrition.

In addition, Dr. Alonzo E. Taylor, Dr. Ray Lyman Wilbur and Dr. Vernon Kellogg, members of the Food Administration, are *ex-officio* members of the Committee on Alimentation.

New Committee on Public Health.—The United States Food Administration announces the creation of an Advisory Committee on Public Health. This committee has been created because the Food Administration, realizing that the nutrition of a people and the condition of its food supply bear intimate relations to the general problems of public health, sought the advice of experts in these lines. Dr. Welch has been named as chairman of the committee, the personnel of which is as follows: Leonard P. Ayer, Herman Biggs, David T. Edsall, Cary T. Grayson, A. Walter Hewlett, T. T. Janeway, F. G. Novy, Richard M. Pearce, William H. Welch, and H. Gideon Wells.

Dr. Ayer is permanently identified with the school hygiene movement. He has been Director of the Department of Child Hygiene, Education, and Statistics of the Russell Sage Foundation during the past ten years, and is the author of books and articles on the educational and statistical phases of health work.

Dr. Biggs is a member of the Rockefeller Institute and an authority on public health and sanitation. As a representative of the Rockefeller Foundation, Dr. Biggs has recently completed a survey of the health conditions of France, with particular reference to tuberculosis.

Dr. Edsall is Professor of Internal Medicine in Harvard University; he has in the past devoted much effort to the investigation of nutritional diseases and within recent years has become identified with research in the general domain of industrial diseases, which bear to nutritional diseases, both in the individual and society, a close relationship.

With the creation of a large army and navy, the public service has a natural relation to the work of food control, and to represent the interests of the armed services of our country Admiral Cary T. Grayson has been placed upon the Advisory Committee.

Dr. Hewlett is Professor of Internal Medicine in Stanford University and is a recognized authority on the subject of diseases of the circulation and elimination.

Dr. Janeway is Professor of Internal Medicine in Johns Hopkins University; he is the author of books and articles on diseases of circulation and elimination.

Dr. Novy is Professor of Bacteriology in the University of Michigan, and through many years of active research over the broadest domains of his subject has established himself as an authority upon the subject of general sanitation.

Dr. Pearce is Director of the Department of Research Medicine in the University of Pennsylvania. Dr. Pearce has paid particular attention to the subject of national health and sanitation and has during the past two years, as a representative of the Rockefeller Foundation, completed surveys of the conditions of health and sanitation of Brazil and the Argentine Republic, at the requests of the governments of those countries.

Dr. Welch, Professor of Pathology in Johns Hopkins University, is scientifically and personally regarded universally as the dean of the American medical profession. There are a few departments of pathology to which Dr. Welch has not contributed in research, and there are no departments connected with public health upon which he had not impressed the influence of his wisdom and experience.

Dr. Wells is Director of the Sprague Memorial Institute of the University of Chicago, a research institution devoted to the investigation of diseases of constitutional type. Dr. Wells is the author of a very successful work on chemical pathology, the first of its kind in any language, and has contributed important research to many subdivisions of medical science.

It is believed that through the advice and co-operation of this committee, representing specialized workers in the various correlated departments of medicine, the administration of food control will be enabled to work for the best interests of the health of the different classes in different sections of our country.

In addition, Dr. Alonzo E. Taylor and Dr. Ray Lyman Wilbur, members of the Food Administration, will be *ex-officio* members of the committee.

Dr. Roger C. Perkins, with Red Cross Commission to Roumania.—

On July 22nd, the Red Cross War Council announced the dispatch of a Red Cross Commission to Roumania. It was headed by Henry Watkins Anderson, of Richmond, Virginia. This commission planned to undertake at once, in addition to its investigation of sanitary and health conditions, actual relief work among the Roumanian refugees. To do this work, a Red Cross medical unit of twelve doctors and twelve nurses accompanied the commission.

Quantities of medical supplies, serums, vaccines, and foodstuffs, urgently needed in Roumania, were sent with the commission by the War Council. A special emergency appropriation of \$200,000 was voted for Roumanian relief.

In addition to Mr. Anderson, the chairman, the members of the Commission to Roumania are:

Arthur Graham Glasgow, an engineer of Washington, D. C. Mr. Glasgow is one of the leaders of his profession, and has lived for more than twelve years in London where he maintained extensive offices.

Dr. Francis W. Peabody, of Boston, who represented the Rockefeller Foundation in its medical investigation in China.

Bernard Flexner, of Chicago, a lawyer who has taken a prominent part in many sociological movements in the Middle West.

Dr. H. Gideon Wells, of Chicago, Professor of Pathology in the University of Chicago.

Dr. Roger Griswold Perkins, of Cleveland, Professor of Hygiene, Western Reserve University.

Dr. Robert Bryan, of Richmond, Virginia, who is one of the leading surgeons of the South.

Doctors of the Medical Unit accompanying the Commission were:

Dr. W. D. Kirkpatrick, Bellingham, Wash.; Dr. Richard Penn Smith, Fort London, Pa.; Dr. D. J. McCarthy, Davenport, Ia.; Dr. George Y. Maszenberg, Macon, Ga.; Dr. R. H. Rulison, Syracuse, N. Y.; Dr. B. C. Hamilton, Syracuse, N. Y.; Dr. Benjamin Earl Le Master, Macomb, Ill.; Dr. Louis H. Limaure, Lynn, Mass.; Dr. E. F. Hird, Bound Brook, N. J.; Dr. W. T. Lowe, Pine Bluff, Ark.; Dr. Joseph P. H. Gruener, Chicago, Ill.; Dr. Feo Dure Guca, Chicago, Ill.; Dr. Wm. J. Kucera, New Prague, Minn.

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TREATMENT OF TUBERCULOSIS OF THE SPINE

BY GEORGE I. BAUMAN, M. D.

CLEVELAND

In 1906 while attending an American Orthopedic Association meeting in Toronto, I visited a children's hospital under the direction of MacKenzie. In the yard were a number of patients lying *naked* upon benches. We saw these patients through a lattice-work fence from a distance of about twenty-five feet. Someone in the party remarked that it was strange how many colored patients MacKenzie was treating. Of course, these were white children so thoroughly tanned as to resemble at a little distance a colored child. It was also remarked that these children were all recumbent.

In 1908, in his address on this subject in this room, Lovett said that a prolonged period of recumbency was desirable in all cases of tuberculosis of the spine, but that it was not usually practicable in dispensary patients.

In 1905 appeared the first of a series of articles by Rollier on the importance of heliotherapy in the treatment of surgical tuberculosis. Several subsequent publications by the same author and by others have made the name of Rollier and the little town of Leysin, in Switzerland, famous. As many as one thousand cases of bone and joint tuberculosis are treated in the various hospitals in Leysin at one time. These patients are also kept recumbent for a varying length of time, averaging in the neighborhood of seven to ten months.

In 1911 and 1912 Hibbs and Albee announced their method of fixation of part of the spine in these cases of tuberculosis.

This brief review of the recent history of the treatment of tuberculosis of the spine will demonstrate some of the more important points in this subject.

For a number of years all cases of tuberculosis of the spine admitted to Rainbow Hospital have been treated by a prolonged period of recumbency in the open air and sunshine as much as possible. There has been no question of the improvement in the results. The frequent picture of anemia, emaciation, pain and anxiety seen in these cases is changed in a short time to one of health, contentment and happiness.

Understand these children are not simply put to bed. They are all placed on hyperextension frames and are turned only by one who has been trained in the proper method of doing this, so as to avoid as much as possible any pressure between the diseased bodies of the vertebrae. There is a marked decalcification in the area involved, leaving a soft, pliable mass which is only held together by the natural resistance of the soft parts, the thin bony framework posteriorly and the contraction of the muscles. This mass can easily be disturbed by any motion or compression. As soon as this danger was disclosed efforts were made to hold the spine quiet, to avoid the pressure of the weight of the body above the diseased area and to promote healing. As early as 1778 Jean-Pierre David, a French surgeon, recognized the importance of rest in the cure of just this sort of trouble. He also laid down certain rules of treatment of tuberculous abscesses and sinuses which we could well use to guide us now. Recently, and even at present, it has been thought by some that the spine could be held efficiently in the acute stage of tuberculosis by a brace or corset and the patient allowed to be about. This, it seems to me, is a physical and mechanical impossibility, and it is gratifying to note that the importance of recumbency in the treatment of the acute stage of this disease is receiving the credit due it. If this is combined with the proper amount of hyperextension and constant out-of-doors living, then the patient will be at the greatest advantage in combating the infection and the likelihood of subsequent deformity.

The form of hyperextension used, whether it be by a gas-pipe frame, by plaster-of-Paris bed, by mattresses or by boards, should be left to the discretion of the surgeon. My own preference is for the plaster or celluloid bed, as it seems to me the fixation can be well regulated and the patient easily and comfortably handled.

The length of time of recumbency varies with each patient and should be governed entirely by the progress of the case. If an estimate is required it should not be placed at less than one year in the

acute case. We are keeping practically every patient in bed at least one year, and average a little more than this. We aim to have the process healed with good consolidation before the patient is allowed to get up. It is difficult sometimes to judge of the progress of the disease, but the following points are of value in determining the advisability of getting the patient up: the amount of recalcification and consolidation as shown by the X-ray; the progress of the deformity as shown by periodic tracings; loss of muscle spasm; complete absence of fever; no demonstrable abscess and no sinus. Probably most important of all is the behavior of the patient. These children lie perfectly happy and contented for months at a stretch during the acute stage and make practically no effort to get up. As the local condition improves the child manifests increasing activity, moving first its arms and legs more freely, then the head and spine. It finally becomes so active that further restraint is seen to be unwise if not impossible. A brace or celluloid jacket is then made and the child gradually gotten up. The lack of muscle atrophy is surprising in these cases. In fact the muscles often seem to develop as the child improves in bed.

It has been asserted by Rollier and others that the kyphos may be greatly reduced by rest and hyperextension. We have not been so fortunate although we have been able to reduce the deformity some in some cases and are usually able to prevent any increase. While recumbent these patients should be kept busy and amused.

Although conditions in this locality are not ideal for the giving of the sun treatment, our experience has proved to us that good results may be obtained. A general pigmentation may be maintained for about six months, and I have been able to keep up a good local tan throughout the winter in some cases. However, most of these patients may be kept out of doors the year around, and this is an important part of the treatment. Some details regarding heliotherapy are necessary. The first exposures should be short and should cover only a small part of the body. A sunburn will only delay matters. We start with the feet for ten to fifteen minutes, gradually increasing the area and the time. When one side of the body has been covered the other side may be started. The total length of exposure varies from a few hours to practically the entire day. Improvement is much more noticeable after pigmentation has been established. Brunettes tan better and do better than blonds. At Rainbow Hospital late last summer a few of the children who

had been thoroughly exposed to the sun on the south porches were removed to the ground. They very soon showed signs of sunburn. Other children had been exposed in this way all summer, but the loss of penetration, due probably to absorption of rays by the surrounding brick walls, had not occurred to us. This summer a platform has been built and all of the tuberculous cases receive the full benefit of the sun treatment. The "up" children play about the yards in the latest back-to-nature style. To avoid relapses every child should have a month or two of sun-treatment every summer for several years. The so-called artificial heliotherapy by pink, blue or green lights has not been a success.

Complications are not so common with this as with other forms of treatment. The general advice regarding abscesses should be the same as for cleaning a baby's ears—nothing smaller than your elbow should be inserted into them. When the abscess is increasing in size or remains stationary over a very long period of time it may be punctured under the most careful asepsis. A tight bandage or binder should then be applied and after twenty-four hours sun exposures should again be started. In this way we usually avoid a mixed infection and sinus. Injections into the abscess should be avoided. Old sinuses often heal under heliotherapy, and if they do not there is little hope for them. A few have seemed improved by injection of bismuth paste. Special attention should be given in these cases to the removal of any disease or defect in the teeth, tonsils or ears. The diet should consist more of vegetable than animal foods.

I have said practically nothing about the fixation operation in the treatment of Pott's disease, because it seems to me these operations should occupy a very minor place in this subject. The great danger is that the operation has been performed as a curative procedure to the exclusion of other and more important measures. The tuberculosis of the spine is only a manifestation of a more or less general tuberculosis and the general treatment should therefore take precedence over the local treatment. The fixation operation is no more curative than the application of a brace and, in fact, is only an internal splint in place of an external splint. If it could be applied with no danger there is no question but that it would be more efficient than an external brace.

The mortality from these operations should not be neglected, and I suspect that many deaths have occurred which have not been

reported. I was unfortunate in having one such case. Death occurred as the child was being turned before an incision was made. It was no doubt due to some compression or disturbance at the seat of the disease. Since then I have always made a plaster bed before the operation, and turned and handled the patient in this. These patients should be handled with the greatest care while under an anesthetic for any operation, as the natural protection of the spastic muscles is lost. Recumbency and external fixation should be continued indefinitely after these operations. When the craze for the fixation operation has passed, if it has not already passed, it will be decided that only certain cases should be selected for operation. Practically all cervical and lumbar cases will be excluded as an undesirable amount of fixation is obtained. Very young children and patients with abscesses are now usually excluded. The operation will be confined chiefly to older children and adults.

Summary

Tuberculosis of the spine should be considered a local manifestation of a more or less general tuberculosis and treated as such.

Rest, heliotherapy, fresh air and good food are doubly important, as they influence favorably the local as well as the general condition.

Abscesses should not be operated unless absolutely necessary.

Fixation operations should be reserved for selected cases.

TREATMENT OF SYPHILIS IN THE ARMY†

BY HAROLD N. COLE,

Associate in Dermatology and Syphilis, Medical Department, Western Reserve University.

CLEVELAND

In a previous paper we have discussed some of the essentials in¹ prophylaxis of venereal diseases as applied to soldiers. The question now arises: in what way are we going to be best able to combat and treat syphilis in the trenches, back of the lines and in the training camps. Certainly it cannot be done in the same manner as in civil life, as war has always required the maximum number of soldiers for or in the trenches; provided they are in efficient condition. So the problem resolves itself into a rapid, thorough method of treatment that will put the syphilized soldier back into the trenches in the shortest space of time, provided it is safe for him and his fellows.

Very soon after the outbreak of hostilities, Neisser² came out in two different papers advising ambulatory treatment of syphilis. He claims it would be possible to give weekly intramuscular injections of gray oil .25 grms. for five or six weeks and along with this three intravenous injections of neosalvarsan .4 grms. to .9 grms., a week apart, following the technique devised by Ravaut* and others. Neisser advised the treatment of all prostitutes, whether syphilitic or not, by salvarsan and the establishment of capable specialists in dermatology and syphilis for all base hospitals.

Though he has some supporters of his views in Germany, yet he has been very severely criticised by such authorities as Lesser,³ Zieler,⁴ Touton⁵ and others. They all urgently recommend the placing of fresh cases in special hospitals. Jadassohn⁶ feels that up to certain standpoints it might be possible to treat the cases in the field, but also believes in hospitalization for the acute luetics.

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*Ravaut (*Presse Medicale*, Oct. 11, 1915, page 398) boils for fifteen minutes in as clean water as possible a 2.0 c.c. glass syringe, needle and some cotton. He uses the cotton as a filter in drawing up the necessary amount of water (2.0 c.c.) into the syringe. After cooling it is added drop by drop to the neosalvarsan (novarsenobenzol, neodiarsenol, etc.) in the ampule and after thorough solution it is reaspirated into the syringe. It is then slowly injected intravenously. (This method has proved very useful in army life, but is hardly to be recommended for general practice in civil life.—H. N. C.)

With the French syphilographers, especially, this question has been decided for some time. France has her battle lines divided into twenty-one *Regions*⁷ or divisions, with a base hospital for syphilis and gonorrhoea conveniently located behind the line in relation to the battle line and other base hospitals. This is very essential, as the material is to come from other base hospitals and directly from the zone of war. To our minds this is the type of hospital that should be adopted by our government in treating these cases.

The personnel should consist of a director for treating syphilis and gonorrhoea, with probably at least one assistant for the syphilis and another for urological cases. As many men as are required for the number of cases at hand could be under his direction. This director must of necessity be a man thoroughly versed in dermatology and syphilis, because of the close inter-relationship found in so many of these cases. Pautrier⁷ has illustrated this very clearly in his experiences at the French Venereal Hospital for *Region* No. 21. The hospital must also have a dentist attached, as it is very essential where maximum doses of mercury are being used that the patient's teeth be in the best condition. There must also be attached one skilled assistant to do laboratory work. This hospital, above all others, should have a thoroughly equipped laboratory, for here will be done all the Wassermann reactions required for all the divisions. The same also applies in case this hospital is situated at a cantonment. The facilities must also be at hand for quick diagnosis of chancres by means of the dark field illuminator and india ink methods. This laboratory would require a small animal room in connection with it for the keeping of guinea pigs and rabbits. A well equipped distillation plant would also be essential for the distilling of water to be used in Wassermann and general laboratory work and in use for administration of salvarsan. This hospital must also have an out-patient department to take care of the ambulatory, but not freshly syphilized soldiers, and there will always be large numbers in the vicinity of the army base and of army cantonments. Educational work among the soldiers can also be carried out and directed from these hospitals.

The treatment to be carried out in these hospitals should be of the most vigorous type and designed to put soldiers back in the trenches as soon as possible, but yet designed to keep him out of the hospital as long as possible. We believe the system carried out in the English navy⁸ is to be condemned and in the end will mean far

more sick days, less efficiency and greater danger to the patient himself and to his comrades. The Royal Navy merely administers one dose of salvarsan or one of its substitutes a month for a maximum of three doses, and gives the soldiers six injections of mercury. It is hardly to be wondered at that they do not succeed in getting negative blood reactions on their patients and that they are having many recurrences. True, through their method, the patient loses no time, but what of the danger to himself and to his fellows, and what of the future? Hudelo⁹ outlines the measures used by Jeanselme and himself in the L'Hopital Broca at Paris; and we might add that the author states that they are used also by such men as Favre, Longin, Pautrier, Goubeau, Pasteau and Mollin, Ravaut,¹⁰ Thibierge.¹¹ The patient receives an intravenous injection of novarsenbenzol or galyol of 0.3 grms., which is repeated every five days; raising the dose gradually up to a maximum of 0.9 grms. Thus in forty to forty-five days the patient receives four to five grms. of the arsenical preparation and interspersed with this there are twenty intravenous injections of mercury cyanide, .01 grms. On discharge all his patients have negative Wassermanns and all have discharge slips or instructions for the patient to get mercury treatment by injection or pills after two months. With the American Army it might be possible to use the co-operative inunction plan already tried out on the border, *i. e.*, a group of syphilized soldiers remove their shirts, form a circle and each man rubs in unguentum hydrargyrum for his fellow on the back. The strenuous French method of treatment outlined above at first glance may seem to be time consuming and too expensive. However, in the end there is no question but that less total sick days will be lost to the army thereby, and it will surely be less expensive and certainly less dangerous to the army itself and to the public. And if we are to consider our soldiers in relation to future citizenship, it is unquestionably the only course to be followed.

There can be no question as to the advisability of venereal hospitals. They are certainly the only place where treatment can be efficiently carried out. They will always serve as clearing stations for a large number of cases questionable in character, *e. g.*, puzzling skin conditions, which are very common in the army, can be correctly diagnosed at once; the same also applies to syphilis of the skin and with the venereal or extragenital lesions, much valuable time will be saved by use of the laboratory methods at hand. The venereal hospitals will lessen the complications in the given cases;

they will save much valuable time; the army itself will be better protected and the soldier will certainly be a better fighter than where he is getting perfunctory ambulatory treatment at off times.

Summary*

From the standpoint of the individual, of the army, of the public and of the state's welfare, our freshly syphilized soldiers should be treated in special base hospitals for these cases. These hospitals should be under the direction of competent specialists in dermatology and syphilis, and have the laboratory facilities so essential for the early diagnosing and proper treatment of syphilis. Each hospital should have a dentist associated. The treatment should be of the most vigorous type and designed to clear up the patient's condition as soon as possible, to return him to the trenches as soon as possible, and yet to keep him out of the hospital as long as possible.

This can only be done by a series of six to eight salvarsan (or one of its congeners) injections, five days to one week apart, accompanied by as much mercurial treatment as the patient can stand. This patient must later have some ambulatory mercurial treatment from time to time. If these measures are not carried out, innocent cases of syphilis will be very common among our soldiers, in the end there will be more sick days in the army, the army strength will not be at its maximum, and in the future the soldier, his family and the state will have to suffer the consequence.

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*Since this and the previous article on prophylaxis was written the program of social hygiene as to morals and health as outlined by the Surgeon General's office has appeared (*Jour. Am. M. Asso.*, Aug. 25, 1917, page 654). Surgeon General Gorgas, with Col. S. F. Russel, of the Army, in conjunction with such well-known specialists as Dr. Wm. Allen Pusey, of Chicago; Francis R. Hanger, of Washington; Grover W. Wende, of Buffalo; S. Pollitzer, of New York, and Henry E. Morton, of Brooklyn, have worked out a program and plan of the highest type and efficiency. Our Government is to be commended for looking after this problem before the hostilities commenced instead of after the damage is done.

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- 2073 East 9th St.

A SUGGESTION FOR THE COLLECTION OF URINE IN FEMALE INFANTS*

BY H. O. RUH, A. B., M. D.

CLEVELAND

For those persons intrusted with the task of obtaining specimens of urine from female babies, the device described below will be found very serviceable.

The routine catheterization of female infants, besides being a bothersome procedure, is to be deplored on account of the danger of infection. The use of warm or hot water poured upon the vulva while frequently successful as a means of obtaining a specimen, is time-consuming and at best a sloppy method.



The following apparatus is extremely simple; the materials are always at hand or can be obtained very easily. In my experience the use of the apparatus has been attended by success. It is in routine use at the Cleveland City Hospital on the Pediatric Service and Contagious Departments, where it has solved a rather large nursing problem.

The accompanying photographs are nearly self-explanatory.



A common rubber bulb ear syringe, some adhesive tape and a test tube are the only materials required.

The cuts are made in the ear syringe as shown in the photograph. Care should be used to make the tip (A) quite large so that it will fit snugly into the fossa navicularis. The more slant there is to the cut into the bulb the lower will be the position of the tip of the collector.

The test tube is fastened to the tip by means of adhesive tape or by using the finger of a rubber glove or finger cot slipped over the test tube. Two holes are made in the end of this; one for the end of the collector and one for the escape of air.

The apparatus is applied to the vulva by means of adhesive tape or, in institutions, by means of a special binder.

*The Babies' Dispensary and Hospital—Cleveland.

THE MANAGEMENT AND TECHNIQUE OF SPINAL-CORD OPERATIONS

BY M. E. BLAHD, M. D., F. A. C. S.

Director of Surgery, Mt. Sinai Hospital Pro Tem.

CLEVELAND

The object of this paper is to bring to the attention of the profession certain facts concerning operations upon the spinal-cord and to correct the impression that operations of this kind are accompanied by such a high mortality rate, that they should only be undertaken when every other form of treatment has failed. The last decade has brought forth great advances in spinal-cord surgery and it is now the consensus of opinion of operators, especially trained in this field, that a laminectomy is just as safe as the average severe laparotomy. In the following paragraphs the writer will endeavor to describe the technique and management of spinal-cord operations, calling particular attention to the various safeguards which have made laminectomy a comparatively safe procedure.

Operations upon the spinal-cord should only be performed in a well-managed and equipped hospital where the operator can positively rely upon the asepsis and where it will not be necessary for him to consume valuable time in checking up the technique or the assistants. In spite of the greatest precautions, infections occasionally occur and a patient will be lost from septic meningitis. We lost one of our cases in this unfortunate manner. Naturally the infection was attributed to the catgut, but if the truth were only known, it was probably due to faulty technique on the part of one of the operating crew. The usual methods of sterilization, such as the iodine method, if carefully carried out, are amply sufficient.

The choice of anesthetics seems to differ with the habits and usages of the various operators. In the clinics abroad they show a preference for chloroform oxygen anesthesia, whereas in the large clinics in this country, ether seems to be preferred. In our own work we have used chloroform, ether and nitrous oxide oxygen anesthesia. My preference lies with the latter, since in the hands of an expert it is not only the safest but also adapts itself better to the operations as we perform them than either ether or chloroform. A certain part of each operation upon the spinal-cord can and



FIG. 1

Right: Blunt dissection of pre-vertebral muscles. Left: Gauze pack in place to control hemorrhage.—Krause.

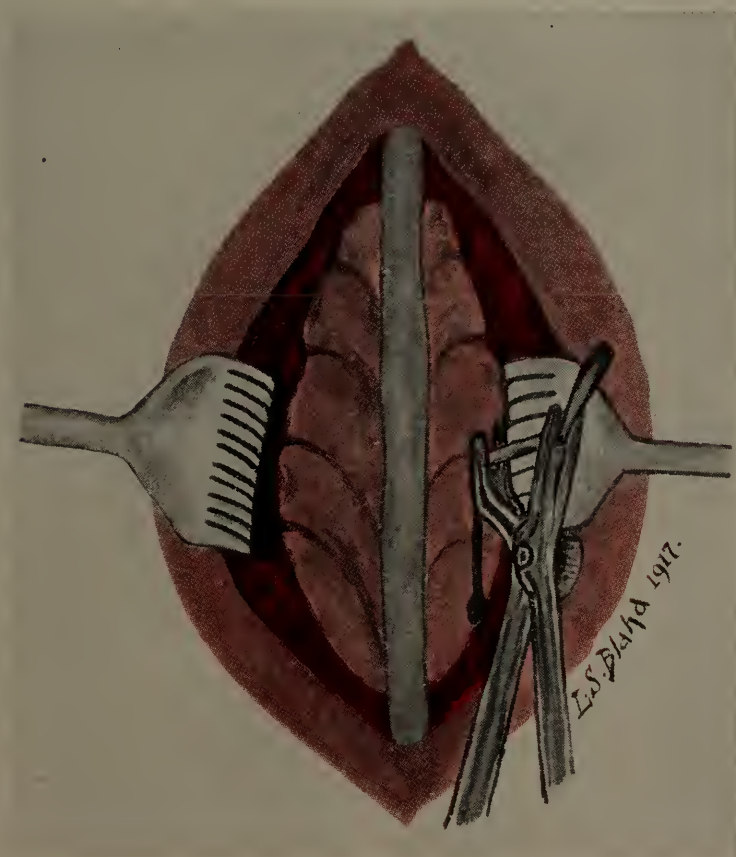


FIG. 2

The act of cutting lamina with Dahlgren's laminectome.—Krause.



FIG. 3
Removal of lamina in one piece.—Krause.



FIG. 4
Injection of novocaine into spinal-cord.

should be performed with very little or in most cases with practically no general anesthetic, and since with nitrous oxide oxygen anesthesia it is possible very quickly to place the patient in any degree of anesthesia desired and since the last part of the operation after the bony structures have been removed is practically performed under spinal anesthesia, we find the nitrous oxide oxygen anesthesia the most suitable for this class of cases.

The position of the patient upon the operating table is of great importance both from the standpoint of the prevention of shock and the access which it gives to the spinal canal. In our earlier cases we placed the patient on his right side with the back well arched and the legs flexed upon the abdomen. Although this position gives excellent access to the spinal canal it does not aid in the prevention of shock. Recently we have placed the patient flat upon the abdomen with the head and legs lowered. This position also gives excellent access to the spinal canal and has the additional advantage of being a big factor in the prevention of shock, on account of its effect upon the cerebral centers and the vessels of the splanchnic system.

The incision for the exposure of the spinal-cord should be five to six inches in length directly over the spinous processes of the vertebrae whose lamina are to be removed. The soft tissues are quickly separated and the ligaments connecting the tips of the spinous processes are cut away. The vertebral muscles on either side are separated by blunt dissection, occasionally dividing a tendon or strong band of fascia with scissors. The blunt dissection of these muscles consumes a little more time than a sharp dissection, but one is more than compensated for the loss of time by the small amount of hemorrhage produced. This hemorrhage can readily be controlled by packing, and in our entire series of cases we have never been compelled to use hemostats to control bleeding. Whereas when the muscles are dissected sharply the hemorrhage often becomes a serious problem. The lamina are exposed for about one-half inch on either side, usually as far out as the transverse processes, which should never be removed, as they act as one of the chief supports to the spinal column. A small opening is then made with a sharp bit in the uppermost lamina to be removed and enlarged with a blunt Doyens' burr. A dura separator is then inserted into the opening and the dura carefully separated from the bony structures. The lamina are then cut through by means of a Dahlgren's laminectome as modified by Krause. The ligaments

between the spinous processes at the upper and lower limits of the incision are separated and the bony structures removed with a Langenbeck forceps. All rough edges of bone are carefully cut away with a rongeur forceps, being careful not to exert any pressure upon the cord. The operation up to this time should not consume more than fifteen to twenty minutes and if all the manipulations are carried out gently and without undue force there should be no shock produced. At this point I cannot refrain from saying a few words as regards the osteo-plastic flaps some operators have been making for the exposure of the cord. In our opinion this is an absolutely useless, unnecessary and time-consuming procedure. It is a well-known fact that the lamina do not materially contribute to the support of the spinal column and that they can be removed with impunity. Krause reports a case in which he removed nine lamina without in any way affecting the patient's ability to maintain an erect posture. In fact, we believe the osteo-plastic flap to be a distinct disadvantage to the patient, as it only increases the time and severity of an already very serious procedure.

The manipulations upon the spinal-cord itself constitute the most dangerous portion of the operation and it is needless to say that these manipulations must be carried out with the utmost delicacy. It has been our practice for the last six years to block off the upper portion of the spinal-cord and brain by means of a 1/10% solution of novocaine injected directly into the cord immediately above the seat of operation. We are of the positive conviction that this procedure greatly lessens the possibility of shock. We have upon several occasions observed a pulse of one hundred and thirty come down to less than a hundred immediately after the injection of the cord. It is at this point that the anesthetic is practically discontinued, as the remainder of the operation can generally be performed under the spinal anesthesia produced by the novocaine. The dura is then gently grasped with fine forceps and a small opening made into it by means of a fine-pointed knife. The spinal fluid is then allowed to escape slowly. When the flow of the spinal fluid stops the dura is split open with a Mayo scissors to the desired extent. This completes the operation so far as the exposure of the cord is concerned, and the operation from this point must necessarily vary with the various conditions which are found. It lies not in the province of this paper to discuss the special technique of resection of the posterior roots, the extirpation of tumors or other pathological conditions met with when the dura is opened, but suffice it

to say, that the same rule as regards gentleness, delicacy, speed and carefulness is even more applicable to the intracord manipulations than to the preceding portion of the operation.

After the necessary procedure has been carried out on the cord itself, the dura is closed with a continuous catgut suture, placing the stitches far enough apart to allow for a small amount of drainage. The muscles and skin are closed in the usual manner, placing a few strands of catgut into the incision to facilitate the exudation of serum.

We do not attempt to restrain the movements of the patient after the operation by placing him in a plaster jacket or brace, but in fact allow him to assume the position in which he is most comfortable. We have never seen any harmful effects result from this practice. Large doses of morphine are given for the first few days, trying to keep the patient in a semi-stupor. The amount of morphine which it is safe to give can readily be judged by the respirations. It is perfectly harmless to bring the respirations down to 10 or 12 per minute. Fluids in large quantities are administered per rectum by the Murphy method. An ideal solution for this purpose consists of 3% sod. bicarbonate with 4.7% glucose. If the arterial tension is low, saline infusions under the breast render great assistance. The use of heart stimulants should be absolutely discarded. Occasionally symptoms of meningeal irritation occur; these, unless they are due to an actual septic meningitis, can be readily controlled by liberal doses of castor oil. As a rule the convalescence is uneventful and the patient is up and about in a fortnight.

In conclusion, permit me to once more call attention to the two procedures in which lie the secret of success in operations upon the spinal-cord.

1st. The prevention of shock, by the blocking off with novocaine the higher centers of the brain.

2nd. The prevention of shock due to hemorrhage, by the blunt dissection of the prevertebral muscles.

In a recent series Dr. W. G. Stern and myself have operated upon 17 consecutive cases without a death.

(The writer wishes to express his gratitude to Dr. S. S. Berger, of this city, for having first suggested to him the use of novocaine in blocking off the brain and spinal-cord.)

THE PERSIAN SYSTEM OF WATER ABUSE

BY ROLLA E. HOFFMAN, M. D.

MESHED, PERSIA

Foreword

In 1915 the East Persia Mission of the Presbyterian Church in the U. S. A. opened a station at Meshed, on the border of Afghanistan, the most sacred city of Central Asia. And to this station was assigned Rolla E. Hoffman, M. D., who was appointed by the Board of Foreign Missions of the Presbyterian Church, to Persia, in 1914. Doctor Hoffman received his college degree from Baldwin-Wallace and his medical degree from Western Reserve University Medical School.

All roads lead to Meshed, is as true as the old worn-out saying, "All roads lead to Rome." But all roads in Central Asia do lead to Meshed. A pride is felt in this sacred old city, and a longing exists for it which brings people from the "roof of the world," from Arabia, from India, from Afghanistan, Beluchistan, Russia and all parts of Persia. Here all tongues are heard. Meshed is the only one of the three great shrine cities of Mohammedanism in which mission work is carried on, so that, naturally, fanaticism is marked here. In spite of all this, however, the medical work has been well received. With a population of 120,000 inhabitants, Meshed receives as well each year 100,000 pilgrims.

The first case in Khorosan and the first cataract case was an old man who, just as Dr. Cook, a co-worker of Dr. Hoffman's in the Mission, was about to operate, after prayer had been offered, said: "Wait; Jesus, the true prophet, came to me last night and told me not to fear, that my eye would turn out well. *Bismillah* (in the name of God), *Bifarmain* (proceed). A few days later the poor old man insisted on giving us 18 krans, which at first was refused by the missionary, but was finally accepted for the sake of the poor.

The hospital at Meshed where Dr. Hoffman is at work is a small building containing 10 beds, but in the last quarter (3 months) Dr. Hoffman has seen 3,671 patients, performed 92 operations, taken care of 33 in-patients. In the waiting-room 1,320 copies of the Scriptures were sold to the waiting patients.

Dr. Hoffman's letter, which we give herewith, is an account of his journey from Teheran to Meshed. We published two letters of

Dr. Hoffman's in the 1916 volume of the *Journal*, in which he described some of his medical and surgical problems.

The distribution of the population and the location of the cities and villages of Persia has one great determining factor—the amount of water available. The population is not distributed evenly through the country, but is collected in little groups here and there, according to the location of the rivers and springs. In my journey of 600 miles from Teheran to Meshed, overland, last summer, not over one-third to one-fourth of the time could I see cultivated fields from the road. Aside from one stretch of salt desert, the rest is apparently fertile land, with a sparse growth of low thorn, but without water.

This road skirts along the south side of the Elburz mountains all the way, crossing some five or six little spurs of these mountains, which branch southward from the main range. North of the first three hundred miles of this range lies the region of Mazenderan, on the shores of the Caspian Sea, with its jungles, rice fields and very rainy climate, a marked contrast to the barren wastes stretching out southward. I saw no mountain with perpetual snow on my journey, except Demavend, near Teheran, with its stately, conical, white top reaching to a height of nearly 19,000 feet, and yet only a very little rain is able to cross this mountain range in the winter and spring to water its dusty southern slopes. North of the last three hundred miles of the section of the mountains between Teheran and Meshed lies Russian Turkestan, a part of the great Turanian plateau which stretches away to the Arctic Circle and whose rainfall does not greatly exceed that of Meshed.

The water of both Teheran and Meshed, as well as of the five smaller cities in between and of most of the villages, is brought from the mountains by "kanauts," which are interesting things. Passing to the town from the nearby mountains may be seen here and there a row of hillocks, which look like a range of young volcanoes, from 50 to 300 feet apart, 5 to 15 feet high and 20 to 60 feet in diameter, with cratered tops. These mounds are a constant and characteristic feature of the Persian landscape. They mark the location of the "man-holes" of the artificial underground channels which convey their water supply to the towns. A row of wells is dug, and a tunnel bored out connecting them, making a continuous channel for the water. Then the "Mother-spring," or underground water, is

tapped in an upland valley and led into the tunnel, which is usually about large enough to admit of a man's crawling through it on hands and knees. The tops of the wells are usually closed in with a few rocks, and the water is neither contaminated nor lost by evaporation on its way from the mountains to the city, but flows under the desert and comes out clear and cold where it is wanted. Some kanauts are said to be as much as 300 feet below ground in parts of their course and some are ten miles long. They must have cost a large amount of labor. But labor is the cheapest thing in Persia, and the ground is loose; a few men with a short shovel, a pick-axe, a leather bucket and a crude windless turned by the bare feet, can remove a large amount of earth. When, as sometimes happens, the kanaut fails, the city or village reverts to wilderness, hence the water supply is a most vital consideration, and water-rights are a continual cause of quarreling.

When the kanaut reaches the city, the water is let into open ditches, or jubes, and is thus conveyed about the city. Fortunate is the man whose home is located near the "place where the kanaut comes out to the sun," for as the stream proceeds it becomes more and more contaminated. Most of the water supply of Meshed is derived from a large kanaut which opens a few miles north of the city and enters the city as an open canal. It flows throughout the whole length of the city, from northwest to southeast, about two miles down the middle of the broad and straight avenue, which is the chief landmark of the town. This street is intercepted about two-thirds of the way down by the buildings of the sacred shrine of the Imam Reza, through which the stream flows. A year or two ago the recent Governor-General built a pumping station above the city and piped the water from another kanaut into the shrine, so that now the shrine has a supply of good water as well as this public stream.

The muddy water of this open stream is used by that part of the city adjacent to the avenue for all household purposes—drinking water, washing hands and feet, washing clothes, watering animals, and frequently sewage and garbage disposal. I have seen weary horses and donkeys standing in the middle of the stream, near the upper gate, their masters washing their legs and bodies—themselves standing in the water—while all quenched their thirst. Here and there in the stream are to be seen men cooling their feet in the water; washing faces, hands or legs, women washing clothes, servants with dirty buckets, first rinsing them, and then carrying away

water; street-sprinklers filling their leather water-skins, standing in the water while they do it, women washing vegetables, pots and pans, scouring them clean with mud from the bottom of the stream instead of soap, and dirty street urchins, adding their contribution of stones and sticks. A few days ago I visited the city slaughter house, lying outside of the city, to the southeast, where 300 to 600 fat-tailed sheep are killed daily, and found that its water supply is obtained from the remains of this same open ditch which has come down through the whole city. We are fortunate to secure our water from another kanaut.

Every Persian garden has one or more open stone or cement pools, or "hozes" filled with water, and usually containing ten to fifty fishes, as a rule gold-fishes. In this hoze the household wash hands and faces, vegetables, cooking utensils, dishes, clothes, and anything else they think needs washing; into it they plunge, fleeing from the summer's heat, and from it they usually draw their water for all household purposes. We have a hard time teaching our hospital servants not to wash things in the hoze; in fact, I suppose they still do it when we are not watching. Usually the water lost by use and evaporation is simply replaced, but when a foot or so of sediment has accumulated and it becomes difficult to find lost articles dropped accidentally into it, the hoze is emptied, cleaned, and refilled from the open jube in the street.

There but remains for me to mention that acme of the Persian system of water abuse, the bath. Since my foul presence would make the bath of the Faithful "unclean," I am not permitted to enter it; so I must speak from hearsay—except for the odor, by which a blind man could easily locate his favorite bath-house.

The front of every bath-house is painted with crude figures of men and animals in gaudy colors—the barber poles of Persia. The bath itself is under ground, and is piping hot. I am told the water is in a large tank or hoze; it is heated by a fire of dry leaves or dry manure, under a tank, reached by a stairway outside. The water is changed, well, they say it is changed at times. I suppose, when business begins to fall off because of the odor! The towels are large red and white cloths, which are tied corner to corner and hung out in the street or up on the roof to dry. Bathers may be seen running all about the streets clad in nothing but one of these large red and white cloths tied about the loins.

This picture is dark enough, but it is only a similitude of the polluted stuff the native of this desert country drinks as spiritual water, and the foul stream in which he tries to wash away his sins and cleanse his spirit in the sight of God. Going over and over again the empty ritual of his five daily prayers in a foreign language; frantically beating his breast and inflicting himself with wounds, in his month of mourning for murdered prophets who failed to rise from the dead; fasting even from water during the long, hot summer days of Ramazan; traveling hundreds of miles to his sacred shrine to accumulate merit, only to be beaten out of all his merit when he arrives; lied to and cheated and robbed, till he is fairly compelled to lie and cheat and rob in self-defense; seeing nothing about him but sensuality and deceit and untreated diseases, and homeless, unpitied poor—I say his first need is SPIRITUAL, LIVING WATER, after all.

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EDITORIAL

THE TREND OF THERAPEUTICS

Therapeutics is at present in a state of transition, the science gradually displacing the art. The past few decades have seen more of our remedies placed upon a scientific basis, whose scope is steadily widening and adding to its notable contributions to our therapy. The tendency has been rather toward increasing immun-

ity and the normal forces of resistance; the aiding of the natural recuperative and reconstructive powers and away from the older field of so-called drug medication. The wide range of therapeutic possibilities presented by the use of the internal secretions invites further attention, and it is quite probable that it is here and along the lines of biologic and biochemic remedies that the promise of the future largely lies. Many of our newer agents, however, are introduced with extraordinary claims, frequently based on insufficient evidence, which proves fallacious upon more extended trial. We are apt to be carried away by the enthusiasm for new remedies, whose value may be problematical, and discretion would seem to be here indicated and judgment reserved until more definite data have been secured. It is in this field that pharmacology and experimental medicine have come to our aid and rendered clear our knowledge of many drugs, giving us a more accurate therapy in their application to clinical medicine. The influence of pharmacology has tended to simplicity in medication and certainly forms an essential element in modern therapeutic progress. The laboratory, however, as well as the clinical side, has its limitations, and at times its findings fail to coincide with those of clinical experience, and when such discrepancies arise it is rather difficult to reconcile the conflicting claims. Clinical testimony is perhaps apt to be influenced by the personal equation, which enters so strongly into therapeutics and unconsciously perhaps forms an erroneous estimate as to value; but the fact remains that the results of certain of the drugs on which we are accustomed to rely seem scarcely capable of explanation by the laboratory data presented, desirable as it would be to find such aid, and yet having stood the test of time and trial, the common experience of the profession is in their favor, and warrants their use even if at variance with experimental evidence. So, notwithstanding our great debt to scientific research in a therapeutic way, and with full recognition of its value in modern treatment, it would seem that judicious conservatism and rational empiricism are still quite appreciable factors in the best medical practice of today.

J. B. McG.

ABSTRACTS

ABSTRACTS IN MEDICINE

The Pleural Reaction to Inoculation with Tubercle Bacilli in Vaccinated and Normal Guinea Pigs. Robert C. Paterson, *Am. Review of Tuberculosis*, 1917: I: 353.

This paper deals with the results of a series of experiments performed to study the differences in reaction, following the inoculation of virulent tubercle bacilli into the pleura of normal and sensitized guinea pigs. The sensitized animals were previously vaccinated with bacilli of low virulence and as a result had developed a localized glandular tuberculosis and showed a tubercular sensitiveness.

As soon as one hour after the intrapleural inoculation the vaccinated animals developed some hemorrhagic exudate. This increases from day to day, reaching a maximum the eighth or tenth day, after which it is rapidly absorbed.

In the normal animals there was little or no immediate pleural reaction. Within twenty-four hours after the pleural inoculation all the vaccinated animals appeared sick, while a small percentage did not recover from this state and died within two weeks. Those vaccinated animals which survived the first two weeks regained their normal healthy appearance and lived for seventy days or more, while the control animals died in from twenty-eight to thirty-five days on an average. Autopsies on the control animals showed an acute disseminated tuberculosis. The vaccinated animals gave an entirely different picture, the tuberculosis being of a chronic fibroid type. The suggested explanation of these observations is that there is no local response to inoculations in normals such as is found in vaccinated animals, and this defense failing, absorption and dissemination take place rapidly.

This work helps us to understand etiologically the clinical development of pleurisy with effusion, which is generally considered and spoken of as primary and as preceding, sometimes by years, the development of tuberculosis elsewhere in the body. These experiments indicate that tuberculous effusions are not primary, but are due to a reinfection either from within or from without, such infection taking place in a plura rendered allergic by an already existing focus of infection.

R. W. S.

The Cardiac Cases at the Front in 1917. Ch. Aubertin, *La Presse Medicale*, Paris, 1917: XLIV: 451.

Aubertin, Chief of the Cardiac Service of one of the French Armies, gives an interesting review of the last hundred cases seen which he considered as representative of the types of patients he has been taking care of. The hospital is situated near enough the lines so that transportation takes but a few hours—yet he has the proper equipment to take care of the patients. He has not included in this series the heart cases coming from the auxilliary forces—many of whom were definite heart cases who had been refused by the fighting forces. These were given work in keeping with their physical conditions.

Mitral Insufficiency	6	Myocarditis	1
Mitral Stenosis	5	Tachycardia without lesion.....	28
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Aortic Insufficiency	4	Tachycardia, Basedow's	2
Aortic Systolic Murmur	30	Tachycardia, paroxysmal	1
Mitral and Aortic Insuffi.....	1	Bradycardia	1
Organic Murmur, Unclassified....	1	Extrasystoles	5
Dilated Aorta	2	Other functional heart cases.....	11

A group of cases diagnosed as "Faux Cardiaques" was seen, including healthy and robust men complaining of their hearts in order to be evacuated, and in whom no symptoms were found but slight emotional tachycardia seen so frequently in examining soldiers. There have been many men sent back from the front diagnosed as having cardiac disease, who were given work in the auxiliary forces with lighter duties; upon re-examination many of these have been found to possess normal hearts. A group of "Non-Cardiaques" were seen, composed of boys 16 or 17—tired and anaemic, who complained of palpitation—who had slight tachycardia and occasionally a slight systolic murmur. Treatment given was rest and arsenic. Older men observed complained of tire—were slightly emaciated but presented no circulatory symptoms. Among others were alcoholics with tremors and frequently tuberculous with evidence of cardiac strain. Rarely patients were seen with a cardio-pulmonary murmur (Potain). Mitral insufficiency is rarely seen among the combatants. One case was observed with dyspnoea and oedema. He had been at the front for three years without failure. One-third of auxiliary forces have this lesion. Four cases of mitral stenosis were seen who had been in the entire campaign. Because of the prominence of the findings in aortic insufficiency this lesion is rarely overlooked. The majority of the organic hearts seen by the author had systolic murmurs heard best over the aortic region. There were two groups of the thirty cases seen (a) hypertonus with cardiac hypertrophy; (b) tachycardia and a slight murmur. This murmur was not affected by breathing, was slightly changed by posture and was held inoffensive if not accompanied by cardiac hypertrophy or hypertonus. The aortic lesions were well tolerated. Of the twenty-five cases seen all had been at the front since the beginning of the war. Conclusions were drawn from the tachycardia, characteristics of the murmurs, arterial tensions, functional tests and work. Some of the men were sent to the auxiliaries, some to convalesce, and others had their duties changed. The latter were kept under observation by the battalion physicians. Among the 32 cases of tachycardia were two cases of Basedow's disease and one of paroxysmal tachycardia. Cases of arrhythmia (due to extrasystoles) sent to the hospital with the diagnosis of myocarditis were sent back to their regiments.

H. S. F.

The Value of Phosphite and Hypophosphite Combinations in Mercuric Chloride Poisoning. Bernard Fantus and Emory G. Hyatt, *Jour. of Lab. and Clin. Med.*, 1917: II: 2.

Rabbits (fed on equal parts of oats and carrots) were given 0.04 gm. of bichloride of mercury per kg. with fatal results in all animals and an average fatal period of seven and three-fourths days. Rabbits fed on carrots alone were very much more resistant to mercuric chloride poisoning than those fed on carrots and oats. The antidotes used were Carter's antidote (sodium phosphite 10 parts, sodium acetate 6.6 parts) and a combination of sodium hypophosphite and hydrogen peroxide in varying proportions. The animals were given the antidotes five minutes after the administration of the poison. Carter's antidote and the sodium hypophosphite-hydrogen peroxide mixture (two times the volume of hydrogen peroxide) were equally effective in saving the animals. Recovery after the use of the antidotes was 33½ per cent, the average fatal period was 44 1/6 days. The untreated rabbits all died. The average lethal period was 7¾ days.

H. S. F.

ABSTRACTS IN SURGERY

The Development of British Surgery at the Front. Cuthbert Wallace, *Brit. Med. J.*, 1917: I: 705.

The regimental medical officer stays with his men, applying first aid, rescuing wounded comrades from dangerous localities, and carefully and

rapidly removing them to the field ambulance. At the field ambulance there is a personnel of two or three medical officers, non-commissioned officers and orderlies. Here first dressings are supplemented by other dressings and suitable splints. Only operations of extreme urgency are performed here; completely smashed limbs are removed and the patients retained for a day before being transported to the casualty clearing station; hemorrhage is arrested so that the patients are never sent on with tourniquets on the limbs. Abdominal wounds and all severe cases requiring early treatment at the casualty clearing station are sent on by a special motor ambulance, and not kept waiting for the regular convoys. The motor ambulance is the very foundation on which all surgery at the front is based. No horsed vehicles could possibly deal with the numbers of a big fight, their slowness would render futile the attempt of early operation in urgent cases, and they are much more uncomfortable.

The question of time is of so much importance that it is well to explain the amount required to take a patient from the front trenches to the casualty clearing stations. The chief cause of delay is the enemy, for there are many localities from which the wounded can only be removed under the cover of darkness. Otherwise the time is very short, provided the fighting is not so heavy as to wear out and exhaust the number of stretcher-bearers. Of 200 abdominal wounds 169 reached the clearing station in the first 24 hours, 134 within the first 12 hours, 35 within the second 12, 78 within the first 6, 56 within the second 6, 24 under 3 hours, 20 between 3 and 4 hours, 24 between 4 and 5, and 10 between 5 and 6 hours.

The development of the casualty clearing stations has been the most important new method of surgery at the front. These hospitals are situated behind the trenches, along the entire front. They must have good water supply, be on good rail connections and be related to the trenches by good roads. They are arranged in two series, one six to nine miles from the trenches, the other three to six miles further back. These latter serve as a special reserve during heavy fighting, or as units to care for special cases. The clearing stations accommodate 400 to 1,200 patients. If possible they are linked in pairs and take the wounded alternately; when filled with fresh cases the staff is free to care for these without being disturbed by the continuous arrival of other cases. It is the object of the clearing stations to treat and retain all wounded until they can be safely sent down to the base by ambulance train. During heavy fighting this ideal is not maintained, and removal to the base must take place earlier, but it has been the policy to make the clearing stations the chief place for the treatment of the dangerously wounded man, rather than the field or base hospital. The base hospital is too far away; the field hospital is too mobile a unit to be equipped for the best surgery, and further, for the best results, it is necessary not to move the patient too soon after operation.

It has sometimes been found that the difficulties of the locality have rendered impossible the establishing of clearing stations, and in such cases smaller hospitals of about 50 beds have been instituted as advanced operating centers. Certain special hospitals have also been founded, *e. g.*, special hospitals for diseases of the skin, for shell shock, and for head cases.

X-ray equipment, both in mobile vans and in stationary plants, is of the greatest service. Chloroform has been largely supplanted by ether. And to avoid the prevalent lung complications ether is given as warmed vapor in Dr. Shipway's apparatus. The most important antiseptic measure is early excision of damaged tissue. Hypertonic sodium chloride has not proved successful. Dakin's solution is increasingly employed.

Even slightly wounded men may be in a very bad condition from bleeding, exposure to cold, want of sleep and food, pain and exhaustion due to transportation. Experience has shown that it is not possible to accurately estimate the condition of these patients until they are rested and warmed, and have taken food. The most important of these measures is, especially

in winter, warmth. If the patient goes to sleep it is best to leave him for some time, provided hemorrhage is stopped. Amputation may be postponed a day or even two, and many men will survive who would have succumbed to immediate amputation. Threatening infection, especially gas gangrene, may necessitate earlier operation. When conditions permit, amputation should be done by the flap methods of civil practice, but always with drainage. As much of the limb as possible should be saved, regardless of so-called seats of election. Primary amputations through joints are as a rule to be avoided. In the desparately ill, with smashed and oozing limbs, it is best, under gas, to tie the main vessels and cut off the limb flush above the fracture, consuming not more than ten minutes, and leaving to future operation the formation of a proper stump.

In abdominal wounds the chief cause of early death is hemorrhage. Arrangements were accordingly made to transport these patients by special motor ambulance to clearing stations near the front. Here under good operative surroundings and with the ability to keep the patients without further transportation for a week or more, there have been many recoveries. Statistics show that there is a very close relation between the interval of time previous to operation and the mortality rate; that of various kinds of wounds bullet wounds are highly fatal, and that of 145 patients with a pulse above 120 only 16 recovered. The practice is to operate on principle rather than on the indications of symptoms. It has been found inadvisable to operate cases where it is thought only solid viscera have been injured and in which there are no signs of continuing hemorrhage, and cases arriving after 36 hours. When the missile has been retained help may be obtained from an X-ray picture. Celerity is of great importance. Body heat must be maintained. There should be the least possible exposure of the viscera. All the intestines should be examined. Suture is always preferred to resection if possible. A single continuous linen suture applied so as to invert the peritoneum is quite sufficient. If resection is necessary, end-to-end anastomosis is preferable to lateral apposition. Solid organs should be disturbed as little as possible, unless vessels have been opened. Excision of the spleen and kidney should be practised with great reserve. Through and through wounds of the liver are best left alone, unless the X-ray shows a foreign body in an accessible situation. Abdominal drainage is of little use except in local lesions. Artificial ani in the colon are to be avoided if possible. The large intestine wounds have been mostly fatal from retroperitoneal infection. Post-mortem examination shows this condition to be a frequent cause of death in cases put down clinically as shock. The total mortality, including the moribund, was 60%, the operative mortality 53.9%. It would seem that there has been a lowering of the mortality since the early preoperative days of 15 to 20%.

The opportunity for vascular surgery has been rare. The ends of the vessels are generally too far apart for end-to-end anastomosis. The introduction of Tuffier's tubes, although they become blocked in about 24 hours, maintains some blood-flow while the collateral circulation is being established. In gangrene following vessel injury there is no definite line of demarkation such as is seen in civil practice to indicate the line between dead and viable tissue. One has to be guided by the temperature of the part and the return of the capillary blush after pressure.

Radical change has occurred in the treatment of joint injuries. Intra-articular drains have been abandoned. The wound is excised, the joint opened, cleaned and irrigated, and the whole wound in the synovial sac and the superficial tissues is closed. It is astonishing how seldom infection follows such treatment, even when fragments of shell and clothing are found in the joint; for its success it is essential that the incisions around the wound be carried quite clear of all infected tissue, and that the strictest asepsis be assured. Every wounded knee joint is given a chance to heal by

first intention, although the closure of the joint defect may entail a plastic operation in order to provide adequate covering. Where there is much comminution of the bone it is better to excise.

Poor results in head injuries were at first due to want of good operation and to too early evacuation to the base. A head case before operation travels well. Advantage was taken of this fact to establish special hospitals back of the first clearing stations, where the rush of work would not enforce early evacuation. Cases with a slow pulse are sent on immediately to these hospitals, without much regard to the type of injury. Those with a rapid pulse are kept in the clearing stations till they improve or die. The types of operation done in these special hospitals has changed a good deal. The recognition that a slow pulse is not necessarily a sign of compression and that the symptoms, paralytic and otherwise, are not due to depression of fragments, but to a destruction or commotion of the brain matter, which is not remediable by operation, has had an influence on methods of treatment. A slow pulse is welcomed as a sign that recovery is possible, that operation is worth doing but not necessarily urgently needed. Depressed fragments, likewise, need not be forthwith removed, if there be other advantages in waiting. Here as elsewhere excision of the wound is proper. Exploration of the brain for foreign body should be intelligent (X-ray) and limited to the more accessible and less dangerous situations. Fragments of shell have been proved to have caused little trouble where their weight has been such as not to cause pressure on the surrounding brain. Attempt is always made to cover up the defect with scalp, drainage being limited to the scalp flap. Depressed fractures over the longitudinal sinus should be left alone. The dura mater should not be opened if found intact. The rarity of true compression has helped in the formation of this view. Local anesthetic may be used with advantage. There is still difference of opinion as to whether one ought to operate on small cranial depressions and linear fractures with slight inequality of surface, uncomplicated by symptoms.

In fractures of the extremities the tendency has been to abandon all constricting splints and to depend on extension for fixation. For the lower extremity the Thomas splint is widely used. For the upper extremity the internal angular splint, with hinged back piece, is widely used for transport. In compound fractures the early and thorough cleansing and excision of the wound is the basis of success, no matter what chemicals are used after it is completed.

C. H. L.

ABSTRACTS IN NEUROLOGY

Functional Conditions in the Light of Head Injuries. T. E. Harwood, *J. Roy. Army Med. Corps*, 1917: XXVIII: 699.

The main theories as to the causative factors in functional nervous conditions are: (1) That they are pure neuroses; (2) that they are the effects of toxins, endogenous or exogenous; (3) that they are caused by abnormalities of internal secretion; (4) that they are due to psychic causes.

In fatal head injury, without obviously adequate cause of death, the result is put down to shock. The cause of shock, according to Crile, is due to any exhausting peripheral or central stimulus, psychic influences, cerebral anaemia, and poisons or toxins. The prolonged functional effects of head injuries may be regarded as a chronic phase of shock, which produces neu-raesthenic effects upon the body as a whole.

The author compares the neu-raesthenic state to an electric system in which there is some fault in the circuit or battery. To correct the fault in the nervous system of the body is the therapy necessary to cure the neurosis. The most common fault is due to refractive errors, often of minor degree. Correction by glasses in many cases leads to the disappearance of symptoms. In several cases of head injuries in patients who previously

were well, the author found that accurate correction of refractive errors resulted in improvement or relief of the neurotic symptoms. Apparently the head injury leads to a lowering of the efficiency of the whole nervous system, so that the slight nervous irritation of a refractive error is sufficient to prolong the nervous instability.

T. S. K.

Acute Febrile Poliomyelitis. Gordon Holmes, *Brit. Med. Journ.*, 1917: 2950: 37.

Most cases of multiple neuritis are due to organic or inorganic poisons or are complications of infectious disease. However, certain cases occur in which no definite etiology can be determined.

The onset of the illness is usually rapid, beginning with general malaise or fever without local manifestations. Pains in the legs and back usually set in on the second or third day, followed shortly by weakness in the legs. The paresis increases rapidly, the arms becoming similarly but less severely affected. The face may feel stiff or drawn, the speech become unnatural, and swallowing difficult. When the disease has become fully developed, the motor signs are the same as in ordinary peripheral neuritis except that the distal muscles are not much more severely affected than the proximal and the cranial nerves are involved. The facial muscles are usually quite severely paretic, articulation is slurred and indistinct, and mastication difficult. The tongue is rarely affected and there is no laryngeal involvement. Diplopia occurs quite often, due to ocular palsies.

Sensory symptoms are less prominent than the motor disturbances. Dull, aching pains are occasionally complained of, but these usually occur only when the legs or arms are moved. There is more or less tenderness of the muscles and nerve trunks. Objectively, epicritic and protopathic sensation are scarcely disturbed at all, while postural sense and the vibratory sense are markedly impaired. A certain amount of hyperaesthesia to light moving contacts is occasionally present. There is nearly always some disturbance of the sphincters, usually consisting of difficulty in starting or completing urination. The mental state of the patient is never affected. The urine shows no albumin or sugar.

Of the twelve cases studied by the author, one died of bronchitis and one of bronchopneumonia. All the symptoms reach their maximal severity in a week or so, and in those who survive, the progress of the disease is characterized by rapid improvement.

T. S. K.

On the Nature of Neuropathic Affections of the Joints. By Leo Eloesser, M. D., *Am. Surg.*, 1917: LXVI: 201.

The questions involved in a determination of the cause of neuropathic affections of joints are:

1. Are tabic arthropathies due purely to degeneration of certain nerves that cause the bone to atrophy? (Charcot's theory.)

2. Are they simple syphilitic arthritides, occurring sometimes in the course of a tabes, but not infrequently found in the absence of any nerve lesion? (Barre and Babinski.)

3. Are they due to the combined influence of nerve and bone lesions? If so, where does the primary change lie? In the nerve or in the bone? What is the nature of the nerve change? Is it merely a lack of sensibility, or is it the degeneration of some nerve assumed to exert a trophic influence? What is the nature of the bone lesion? Is it an arteriosclerotic deforming arthritis, or a syphilitic one, or one the result of an unfelt trauma?

In order to answer these questions the author aimed to produce lesions in cats simulating as nearly as might be tabes in man. A series of posterior roots leading to a particular extremity, enough of them to make a total

analgesia, anesthesia and ataxy, were cut. This eliminated many of the factors complicating tabes; the underlying syphilis, for instance. Sections of cords from these cats show an ascending degeneration of the posterior columns corresponding to what would be in a man a one-sided tabes. Cutting one side only enabled the author to have the other as a control. He watched the cats for a considerable period and had the satisfaction of seeing some of them under certain conditions develop what in man would be called a Charcot joint or a tabic fracture.

From these experimental lesions on cats the author states the following conclusions:

1. Bone and joint lesions corresponding to those found in tabes dorsalis may be induced experimentally in the limbs of cats by severing the posterior nerve roots (the sensory fibres) leading from the limb.

2. Severing the posterior roots causes no atrophy of the bone.

3. Tabic fractures and arthropathies have been produced in healthy animals, hence they cannot be ascribed primarily to lues or other infectious causes.

4. The course of deforming arthritis is not characteristically altered by the addition of an analgesic factor, hence the cause of Charcot joint is not to be sought in a simple deforming arthritis occurring in a tabetic.

5. Nothing in these experiments gives proof of the existence of trophic nerves.

6. Of three animals whose joints were subjected to operative trauma after having been previously rendered anesthetic by resection of posterior roots, all rapidly developed Charcot lesions. Trauma in a limb rendered anesthetic and analgesic experimentally leads to grotesque lesions of the bone and joints, which are in every way the counterparts of tabic fractures and arthropathies: *trauma and lack of the warning sense of pain are the cause of most tabic bone and joint lesions.*

T. S. K.

ABSTRACTS IN PEDIATRICS AND CONTAGIOUS DISEASES

Skull Injury at Birth. Arthur Stein, *J. A. M. A.*, 1917: LXIX: 334.

When a child, mentally and physically deficient, shows a history free from hereditary idiocy and there is no deficiency in any internal secretion, skull injury at birth from a protracted or difficult labor is most often the cause of such deficiency. Brain injury at birth may be due to (1) direct contusion of brain substance; (2) local congestion and rupture of intracranial vessels by over-riding parietal bones or congestion of venous system caused by an obstruction of the fetal circulation and resulting in capillary rather than diffuse meningeal hemorrhages. Prolonged general compression of the skull in the birth passages in difficult unassisted labor causes much of this circulatory injury. Presence of Wormian bones particularly in the posterior fontanel preventing an over-riding of the bones probably is detrimental to many infants. Too often instrumental delivery is given as the cause of the trouble, when the injury is incurred before the application of the forceps. A large head and a small pelvis or a normal head and nearly normal pelvis are often the causes of long labor. "Better Baby" workers must also consider this obstetrical traumatism as one of the preventable factors in causing infant deaths or an inferior quality of offspring.

C. W. W.

The Familial Tendency to Fat Incapacity in Infancy and Childhood. Thomas A. Southworth, *J. A. M. A.*, 1917: LXIX: 516.

Inability on the part of many infants to digest usual dietetic amounts of fat generally is accepted. This is not always a temporary condition, but is an inherent characteristic to be carefully watched in later infancy and child-

hood. Pediatricians of late years, in the treatment of older children, find best results in cases of nutritional disturbances when milk is cut down or skimmed or even entirely omitted in the dietary. These same children will give a history of fat injury or incapacity in infancy. Southworth thinks if these symptoms are noted, not only should there be a temporary reduction of fat, but a full fat milk should never be given thereafter. If this skimmed milk were continued into later childhood in these cases of limited fat capacity, there would be fewer so-called "billious" attacks.

Recognition of "familial" tendency to fat incapacity follows from observation in the family of more than one infant, showing limited fat tolerance. Cognizance of this tendency is most important in not only feeding the present but also future children in the family.

C. W. W.

Diagnosis of Tuberculosis in Children. H. D. Chadwick and R. Morgan, *Bost. Med. & Surg. Journ.*, 1917: CLXXVII: 5: 138.

The important symptoms for a diagnosis of tuberculosis are weakness, undue fatigue, fever, poor appetite, failure to gain in weight, and nervous irritability, cough, hoarseness and occasional streaked sputum. It is frequent to find on examination dullness in the interscapular region radiating into the apices at the back. Frequently this dullness is not elicited anteriorly. Much more important than the presence or absence of physical signs are the symptoms together with the history of exposure. The author holds percussion more important than auscultation. A case with signs of infiltration in the chest without constitutional symptoms means an old, inactive lesion, a case without physical signs but with symptoms should be placed under observation and treated as a case of tuberculosis.

H. C. K.

Vaccine Prophylaxis and Vaccine Treatment of Pertussis. G. Caronia, *Pediatrics*, Naples, XXV: 6: 367.

This article is a commentary on the results obtained by the Italian pediatricists with vaccine treatment of whooping cough. Of the cases treated with vaccines 61.28 per cent were cured, 32.25 per cent improved and 6.45 per cent not influenced; 155 children were treated. Some cases required three to five injections, others as many as ten. In all but three cases the disease had been established from five to forty-five days. Some of the children were under one year of age.

H. C. K.

ABSTRACTS IN GYNECOLOGY AND OBSTETRICS

Ovary, Uterus, and Mammary Gland Leo Loeb, *Surg., Gyn. & Obst.*, 1917: XXV: 300.

The ovary is a complex gland of which the most important constituents are follicles in various stages of growth and atresia, and corpora lutea. In addition we find in some species interstitial gland and sometimes embryonic structures developing parthenogenetically from eggs.

Cyclical changes occur both in the ovary and secondarily in the uterus and mammary gland.

The primary cyclical changes in the ovary are in sequence: follicle ripening, ovulation, corpus luteum formation. In some species ovulation is accompanied by degeneration of all but the smallest follicles.

An elaborate self-regulating mechanism controls ovulation. Normally the corpus luteum inhibits ovulation. During pregnancy the life of the corpus luteum is prolonged. Experimentally ovulation can be influenced at will, accelerated by excising all corpora lutea, or retarded by producing artificial deciduomata. The retarding action of the corpus luteum is chemical, not mechanical.

The corpus luteum has a sensitizing action upon the uterus. This action can be analyzed by experimental methods. If the uterus is incised or mechanically stimulated at the time during which the corpus luteum is elaborating this growth substance, maternal placenta (deciduoma) is formed. The mechanical stimuli, therefore, assume in this respect the function which the ovum exerts under normal conditions. The form of growth response of each species is characteristic. The localization of sensitization varies in different species, being limited to the uterus in rabbits and guinea pigs, but distributed more widely in the human female. No specificity exists in the sensitizing substance given off by the corpus luteum as far as different individuals of the same species are concerned. The life period of experimental deciduomata is short except in pregnancy, during which their persistence is prolonged.

Corresponding to and dependent upon the cyclical ovarian changes, uterine cyclical changes occur. The cycle consists of heat, growth with associated glandular activity, regression and interval. Heat probably is due to maturation of the follicles and dependent upon the absence of the corpora lutea; growth activity is the result of corpus luteum secretion, which is followed in the interval by a condition of rest. Pregnancy causing a persistence of the corpus luteum is characterized by an accentuation but not a prolongation of the active phase, and an inhibition of the uterine cyclical changes throughout gestation.

While it is possible to produce, experimentally, during pregnancy a new ovarian cycle, through excision of the corpora lutea, such a new ovarian cycle is not followed by a new uterine cycle. During pregnancy a mechanism is at work preventing the uterine mucosa from responding to the stimuli given off by various ovarian structures.

It follows from the above that the corpus luteum subserves at least two functions, inhibiting ovulation and producing a substance which causes growth in the uterus.

The ovary shows other non-cyclical functions. It has a trophic influence on the genitals and either primarily or secondarily determines the development of the secondary sexual characters.

The ovary, likewise, controls the development of the mammary gland. It exerts a trophic influence on this organ and determines its normal cycle. During heat and subsequent to ovulation proliferative changes occur; these cease while the corpus luteum develops and functionates.

The incidence of breast cancer in mice is greatly reduced by castration.
W. D. F.

Maternal Mortality. U. S. Department of Labor, Miscellaneous Series No. 16, Bureau Publication No. 19 Gov. Printing Office, Washington, 1917.

The connection between maternal and infant welfare is so intimate that it is very apparent that infancy cannot be protected without protecting the mother. The loss of a mother bearing a viable child tremendously decreases the chances of the child living to maturity; also, mothers given prenatal care are much more likely to be able to nurse their children successfully, which is a well recognized necessity in decreasing infant mortality.

The conditions giving rise to infant mortality are, in this study, divided into two classes, puerperal infection, and all other conditions caused by pregnancy and confinement.

From the time of the publication of the work of Holmes and Semmelweiss in 1843 and 1847 respectively, which works were the basis of aseptic midwifery, until 1875, when the teachings of Lister in aseptic surgery began to be applied to obstetrics, little, if anything, was done to decrease the terrible mortality of parturition.

With the introduction of antiseptics and later asepsis, the mortality due to infection which formerly averaged 4 per cent, and in hospital epidemics reached 50 per cent, has now been decreased, so that in well-regulated hospitals it is less than one-fourth of one per cent.

A certain number of women may infect themselves through improper hygiene during pregnancy or just before or at confinement. The instruction of these women in the proper care of themselves at this time will eliminate most of the cases. By far the most of the serious cases of infection at childbirth can be eliminated by proper hygiene and strict surgical cleanliness during and after labor.

With careful supervision during pregnancy other conditions, such as eclampsia, puerperal nephritis, dystocia, placenta previa, etc., which are accompanied by a high mortality, can be either avoided or successfully combated.

Vital statistics, which can be depended upon to show a minimum number and rate, attribute 15,376 deaths to childbirth in 1913. Of these 6,977 were due to infection and 8,399 to other complications at this time.

The death rate from diseases due to pregnancy and confinement was 15.8 per 100,000 population (which includes all ages and both sexes). The rate from puerperal infection was 7.2.

At the same time the rate per 100,000 population was 17.9 for typhoid fever, 18.8 for pneumonia, and 147.6 for tuberculosis. If only women are included in pregnancy mortality, and they alone can be affected, the rate is 31.5 per 100,000 population, and if only women between 15 and 44 years of age are considered, and these are the women affected, the rate is 50.3 per 100,000, of whom 21.6 die from infection. In the registration area the actual number of deaths from pregnancy, in women 15 to 44 years of age in 1913, compared to those of other diseases for the same age period and year, were: tuberculosis, 26,265; pregnancy, 9,876; heart disease, 6,386; nephritis, 5,741; cancer, 5,065; pneumonia, 4,167.

The maternal death rate per 1,000 live births is 6.5, from infection 2.9, and 3.6 from all other complications. That is, for every 154 babies born alive one mother dies.

It is the general impression of the laity and profession that the death rate due to pregnancy is rapidly decreasing. The statement of numerous authorities, however, is that such is not the case, and vital statistics for the past 23 years show that there has been no decrease either in gross mortality or that due to infection. During the same period the rate from typhoid dropped from 46.3 to 17.9; from diphtheria from 97.8 to 18.8; from tuberculosis from 252 to 147.6; from pneumonia from 186.9 to 132.4; from diarrhea, under two years, from 139.1 to 75.2.

The death rates in the large cities are higher than from smaller cities and rural communities. The returns from the latter are not so complete. Many factors may be involved in the higher rates in large cities. While some large cities afford better provision for prenatal and obstetrical care than do smaller cities, this is not true of all; the poor of large cities show a higher rate than the more favored. Overcrowding, overwork, low incomes, ignorance of the necessity or how to obtain obstetrical care, all keep the rate in the cities high, and inability to obtain expert care in emergencies, together with the above causes, though to a lesser extent than in cities, make the rate in rural districts high.

The death rate among the negro population is almost double that for whites. In 1913 it was 15.2 per 100,000 white population and 26.1 per 100,000 colored.

When 16 important countries are arranged in order, with the one having the lowest rate first, the United States stands fourteenth in the list. Only Switzerland and Spain have higher rates; many countries have rates differ-

ing but slightly from those of the United States. The low rates are those of Sweden (6.), Norway (7.8), and Italy (8.9), compared to 14.9 for the United States and 19.6 for Spain.

Conclusions:

Higher standards of care are necessary for women at the time of childbirth.

The low standards at present existing in this country result chiefly from two causes: (1) General ignorance of the dangers connected with childbirth and the need for proper hygiene and skilled care in order to prevent them; (2) difficulty in the provision of adequate care due to special problems characteristic of this country. Such problems vary greatly in the city and in the rural districts. In the country, inaccessibility of any skilled care is a chief factor.

Improvement will come about only through a general realization of the necessity of better care at childbirth. If women demand better care, physicians will provide it, medical colleges will furnish better training in obstetrics, and communities will realize the vital importance of community measures to insure good care for all classes of women.

W. D. F.

Physiology of the New-born Infant. F. B. Talbot, *Am. Jour. Dis. Child.*, 1917: XIII: 495.

Relative to the initial loss of weight which is considered a "natural consequence," and which, although variable, averages 150 to 200 gm., the author gives some valuable suggestions.

The loss is "mechanical" and physiologic." The former due to loss of urine, meconium, vomited amniotic fluid and water evaporated from the skin, the latter to oxidation of body tissue as a result of metabolism and to the fact that the infant is virtually starved during the colostrum period.

The amount of colostrum during the first 24 hours is 4 to 6 c.c., supplying $3\frac{1}{4}$ calories; during the second day 78 to 129 c.c., supplying 51 to 84 calories; for the third day 199 to 238 c.c., supplying 129-154 calories. This food value is minimal and insufficient to supply the energy requirements.

The author believes the advisability of artificial feeding during this colostrum period depends upon the nutritional condition of the child. If there is a good layer of subcutaneous fat which has been provided by nature for this particular period, no feeding will be demanded beyond the nursing; if, however, the child is premature or without fat to utilize for the required energy, it is advisable to supplement the intake of colostrum with milk from another woman. If this be unattainable a 5 per cent sugar (lactose) solution will supply the necessary energy and be less liable to cause digestive disturbances than cow's modified milk.

The physiological functions of the new-born are depressed by cold, and the author warns against exposure and chilling, especially of the poorly nourished infants. Care should be used if any bath is given to avoid chilling. In many cases the bath had better be postponed and the child's body cleaned with warm oil.

W. D. F.

ABSTRACTS IN DERMATOLOGY

Syphilis in the Navy. John S. Dudding, *J. Roy. Nav. M. Serv.*; Lond., 1915: I: 239.

From an examination of statistical reports the author finds that syphilis has been falling in rate per thousand in the Royal Navy. In 1905 it ran about 48.9 while in 1913 it was down to about 22.4. He attributes the steady decrease to the "wave of sobriety" which is an increasing factor in

the life of the modern sailor. The ratio of primary to secondary syphilis runs about 1 to 4, *e. g.*, in May, 1912, 715 primary lesions and 2,744 secondary cases. This proportion indicates poor supervision, for all the secondaries were preceded by a primary sore which was apparently undiagnosed. The author calls attention to the danger in using any mercury salt on a sore of the penis before it has been correctly diagnosed. In the navy use is made mostly of the Burri India ink method. Their routine is to make four daily examinations for treponema and if all are negative to treat the lesion as chancroidal.

H. N. C.

The Early Diagnosis of Syphilis in the Navy. P. Fildes and J. S. Duding, *J. Roy. Nav. M. Serv.*, Lond., 1917: III: 171.

The problem of syphilis to the medical officer is the problem of early diagnosis. They emphasize the fact that one is unable to make a diagnosis from the clinical appearance alone. They classify all venereal lesions as "septic venereal sores" and *any of these may contain spirochoeta pallida*. They prefer the dark field illuminator to the India ink method, as it is quicker and surer. In the first week or so these are the methods of choice to make a diagnosis; after the first two weeks we should begin to use the Wassermann reaction as well.

The resume is as follows:

1. Never apply antiseptics to venereal sores until they have been properly diagnosed. Do not give antisyphilitic treatment.
2. When a man arrives for the first time with non-septic venereal sore, the presence or absence of syphilis can nearly always be settled at once by the dark ground method.
3. When the sore is septic, a single negative result should never be taken as excluding syphilis; always repeat, and when the sore has appeared very soon after infection do not repeat the examination too soon.
4. The Wassermann reaction should be used in all doubtful cases.

H. N. C.

On Venereal Sores Without Generalized Lesions. S. F. Dudley, *J. Roy. Nav. M. Serv.*, Lond., 1917: III: 68.

In 1913 in the Royal Navy only 24.8% of syphilis cases started treatment in the primary stage, and in 1916 only 26.5% of 302 fresh cases were without secondary lesions. This is due to the antiquated method of waiting for secondaries to appear before beginning treatment. Then, too, some men conceal their primaries, while many have had the lesion treated with a mercurial salt which has healed the lesion and masked the diagnosis. The author shows what laboratory methods can do with such cases. Out of 671 men with venereal sores 426 or 63.4% were proved syphilitic at once by the use of the dark field illuminator for Wassermann test. Of the remaining 245, in 115 later examined only 16 or 13.9% proved to be syphilitic by subsequent tests or by appearance of secondaries. Broadly, over 90% of all chancres can be correctly diagnosed by these two tests long before the appearance of secondaries, especially if repeated examinations are made. The dark field illuminator is most valuable in the first week or so after the sore appears, while Craig found with the Wassermann that 34% were positive at the end of the first week, 57% at the end of the second week, and 76% at the end of four weeks. The author found that with the 16 cases undiagnosed by the laboratory methods and later having secondaries, that practically all had used lotio nigra on the sore. He emphasizes the inability to make a clinical diagnosis from a chancre, as they are practically always secondarily infected; thus 41.6% of the luetics had 2 or more sores and 46.8% of the chancroids had only one lesion. Their routine treatment was to dress all chancres with normal saline solution or warm water alone. To make an examination for

treponemata immediately and if negative to repeat at weekly intervals till the sore was healed or diagnosed. To take a weekly Wassermann reaction.

His conclusions are that there would be thousands less sick days in the navy if an early diagnosis and early treatment was made for all chancres. Moreover, the patients would be better off in time to come. H. N. C.

ABSTRACTS IN OPHTHALMOLOGY

Do Moving Pictures Injure the Eyes? C. A. Bahn, *Annals of Ophthalmology*, 1917: XXVI: 427.

Among the eye symptoms which have been attributed to moving pictures are:

Redness of the lids and conjunctiva.

Lachrymation.

Fatigue: Muscular, retinal and ciliary.

Pain in and about the eyes, as well as burning and itching.

Dizziness.

Blind spots.

Electric ophthalmia: Redness and swelling of lids and conjunctiva from exposure to intense illumination. It is occasionally seen in moving picture operators and actors, and subsides in a few days.

The effect of moving pictures on the eye depends upon:

The moving picture.

The eye.

Among the moving picture factors which influence the effects on the eye are:

Film: Speed and character of motion portrayed, character of action portrayed, color values, actual colors, distinctness, contrast, focus and condition.

Projection: Mechanism and condition of lenses, rate and variation of speed, focus, intensity and variation of illumination.

Screen: Reflection.

General conditions: Ventilation, general illumination, comfort and other entertainment.

The eye factors involved are:

Sight mechanism: Keeness of sight, energy required to maintain maximum sight, binocular fixation and interpretation of pictures.

Position of person in theater: Pictures are least tiring when viewed at from thirty to one hundred feet from the screen. Distortion is increased with the angle formed by the line of projection with the line of the observer's sight.

Method of viewing pictures: Any person can tire the eyes unduly by riveting the eyes and the attention upon one subject on the screen for three minutes. For minimum of fatigue, one should view the picture as a whole with the eyes relaxed, and should either close the eyes or look at something beside the screen every few minutes.

Mental effect: Generally the pictures are more or less restful. The looking upward, slight illumination and restful comfort tend to make one sleepy.

Decreased winking.

Personal equation: Some eyes apparently anatomically and functionally otherwise perfect, have a low tolerance for bright light, and are often comfortable when lenses made from anti-glare glass are worn.

Conclusions:

Moving pictures, under favorable conditions, do not cause as much fatigue as does the same period of concentrated reading.

In most persons who experience ocular discomfort from viewing moving pictures there is some ocular defect, such as refractive error, muscle imbalance, or defect of fixation.

When ocular defects are not present, one should be able to attend in a week at least four shows of one and a half hours' duration without discomfort.

Under unfavorable conditions, moving pictures cause fatigue and unpleasant symptoms and may even be harmful.

When the eyes become fatigued one should leave the theater.

R. B. M.

ABSTRACTS IN LARYNGOLOGY, RHINOLOGY AND OTOTOLOGY

Intubation of the Larynx—an Analysis of 350 Cases. Cartin, J. A. M. A., 1917: LXIX: 460.

In the above article the author urges early intubation in private practice before distressing symptoms have developed. The idea that intubation must be performed entirely or largely in hospital practice he considers erroneous. Practically all of his own, and the other cases reported, occurred among foreigners of little or no education, and under the most unhygienic surroundings. For the operation practically no assistants were available. Outside of intubation and an early dose of antitoxin there was for the most part no other treatment or even isolation, the child playing about with other children as before. Among this series of 350 cases there were no chronic tube cases. The author is of the opinion that such cases as a rule are due to trauma at the time of the first intubation. He insists accordingly that the operation be performed with extreme gentleness. In spite of the marked unfavorable conditions, and the fact that many of the cases were seen after most distressing symptoms had developed, there was a surprisingly low mortality—only fourteen (14) per cent.

The conclusions drawn are as follows:

"1. No patient needing intubation should be denied the chance to live because of lack of hospital facilities.

2. Overcrowding of homes, unhygienic surroundings, concealment of disease, and exposure to contagion are responsible for the epidemics.

3. Lack of trained assistants need not deter one from operating.

4. The use of a tube larger than that indicated for a given age gives better results.

5. Early intubation with large doses of antitoxin reduces the mortality.

6. Wearing the tube five days resulted in fewer reintubations.

7. It appears that special diet and methods of feeding are unnecessary.

8. Reintubation does not seem to affect phonation permanently."

W. B. C.

The Foundations of Voice Impairment Resulting from Tonsillectomy. Elmer L. Kenyon, M. D., J. A. M. A., 1917: LXIX: 709-713.

The author calls attention to the danger to the speaking and especially the singing voice from contractions following extra-capsular dissection of the tonsils.

The physico mechanical function of the tonsil and its capsule is of great importance. The full function of the faucial muscles is dependent upon the presence of the faucial tonsil and particularly its capsule. Removal of the

capsule results in the formation of adhesions and contractures which seriously impair the function of the soft palate. Closing of the naso-pharynx is accomplished mainly by the soft palate; consequently impairment of the function of this organ will alter both the speaking and singing voice, giving a nasal tone. The singing voice will be the first to suffer.

In view of the fact that extensive adhesions and contractures occur in throats operated upon by the most skilled surgeons, the fault lies in the principle of the operation.

The surgeon should be extremely conservative about performing tonsillectomy on the throat of an adult with a singing voice of beauty or of great importance to the possessor.

The author suggests that further efforts be applied to the technic and delicacy of procedure in performing the extra-capsular tonsillectomy, and the perfection of an operation aiming at complete intra-capsular lymphoidectomy. The operator would then have two operations from which to choose; the complete operation for sepsis, and the incomplete for trained voices.

C. E. P.

What's the Matter With Medicine? Editorial, *Medical Council*, Philadelphia, September 1917, page 47.

In none of our previous wars had the country learned the lessons of history, and the efforts of the medical men were hampered to a large extent by the officers of the line. In the interval between the wars not infrequently the medical corps was so reduced in numbers that efficiency was impossible. At the beginning of the Civil War, although the Mexican War had occurred but thirty-one (31) years before, the medical corps consisted of only thirty-one (31) surgeons and eighty-three (83) assistant surgeons. The mistakes of the previous wars are scarcely likely to be repeated in the present struggle. Medical men of middle age are volunteering in large numbers, but there is a decided remission in the younger men.

"There is much lay criticism of the 'medical slacker' and most of it is unwarranted. Laymen have not been fair to the medical profession, for they inflict every sort of free service upon it, refuse needed legislation when we have done our part, go out of their way to develop and foster every sort of quackery and promote the interests of every one-sided and erratic *pathy* and *ism* that promises to make money for its promoters. But the public is not saying a word about the war duties of these people."

The author suggests that these men who have been "profiting from human woe and distress in time of peace owe a duty in time of war" and that the better qualified might be used at dressing stations, while the others could render a service as hospital orderlies, ambulance drivers, and stretcher bearers. To quote further, "The true answer, 'What's the Matter With Medicine?' is this: Medicine is not given a chance in the United States, while *near-medicine* and *alleged medicine* is helped in every way. When war makes its demands upon the profession the physicians go away, leaving an unobstructed field to hundreds of self-seeking incompetents." The time seems ripe at present to demand that *pathys* and *isms* make good in time of war, and to insist that in the future there shall be some standard of preparation and education to which all who practice medicine must subscribe.

W. B. C.

Report of Case of Cyst of Larynx. Chamberlin, *Laryngoscopy*, August, 1917, page 622.

The author reports a cyst two (2) centimeters in diameter occurring in a child of four (4) years. Examination and operation were performed under ether anesthesia by means of suspension laryngoscopy. The child almost from birth had manifested a peculiar cry. In addition there was a marked

stridor on inspiration. This had become markedly worse during the past six (6) months. There was no history of dyspnoea or cyanosis. The child was healthy and well nourished. The tumor mass apparently sprang from the right side of the larynx, and almost occluded the opening. It was so firm in consistency that a diagnosis of probable enchondroma was made. On plunging a knife into the mass to confirm this diagnosis, one or two drachms of a thick, brownish, mucilaginous fluid gushed forth and the tumor disappeared. There was now an unobstructed view of the larynx and upper portion of the trachea. The stridor was found to be due to an hypertrophy of the left ary-epiglottic fold.

The patient made an uninterrupted recovery and left the hospital at the end of the third (3) day. Inquiry some six (6) months later showed that there had been no return of the trouble.

Such cases are fairly uncommon, only one hundred and seventeen (117) having been reported up to 1907. Chiari says such growths are due to distended blood or lymph vessels, to distended connective tissue spaces and infrequently to mucous glands through retention, their openings having been occluded as the result of inflammatory, ulcerative or cicatricial processes.

W. B. C.

ABSTRACTS IN PATHOLOGY

The Disinfection of Drinking Water. H. D. Dakin and E. K. Dunham, *Am. J. Med. Sc.*, 1917: CLIV: 181.

The authors recommend the use of P-sulphondichloraminobenzoic acid, which they have found to be very efficient and stable. The tablets could be manufactured to cost about \$12 to \$16 for a quantity sufficient to disinfect 1,000,000 pints of water. No decomposition was noted in tablets kept in amber bottles for two months. Complete method for the preparation of the product is given.

A. A. E.

Studies on Bacterial Anaphylaxis. Hans Zinsser and Julia T. Parker, *J. Exper. Med.*, 1917: XXVI: 410.

The authors picture the typhoid infection as consisting of the following stages: Early injury is due to disintegration of part of the bacteria in the course of which albumose-like bodies are liberated and gradual sensitization of tissues takes place; this process is directly counteracted by circulating antibodies which tend to remove the bacteria from the possibility of yielding their antigen and further injuring the tissue by agglutinating them, aiding phagocytosis and to a slight extent even neutralizing dissolved antigen. The presence of these antibodies and their efficiency seems to be the factor upon which the ultimate recovery depends.

A. A. E.

The Metastasis of Tumors. Douglas Symmers, M. D., *Am. J. Med. Sc.*, 1917: CLIV: 225.

In an extremely interesting article based upon the study of 5155 autopsies at Bellevue Hospital, New York City, the author points out that of all autopsy cases less than 6 per cent were subjects of malignant disease; 74 per cent were attended by metastases, the organs involved being, in the order of their frequency, the lymph nodes, liver, pleura and lungs, bones and adrenals. Epithelial tumors predominated over those of connective tissue origin in the proportion of 8 to 1.

From the point of view of metastases, all body organs seem to be divisible into 3 groups: 1. Organs which are frequently the seat of metastasis, but in which the primary tumors are rare—lymph nodes, liver, lungs, etc. 2. Those which are commonly the seat of tumor, but are infrequently the seat

of metastases: uterus, breast, stomach, etc. 3. Those which are the seat of neither the primary nor of the metastasized tumor, such as kidneys, thyroid, and especially the spleen.

Carcinomatous metastases are rare in the kidneys, but sarcomatous metastases are frequent. The spleen is the most uncommon seat of metastases, but when it is, most frequently the metastases are from tumors notorious for metastasizing to bone marrow, corners of stomach, prostate, breast, and hypernephromata.

A. A. E.

DEPARTMENT OF THERAPEUTICS

Conducted by J. B. McGEE, M. D., Cleveland

The Therapeutic Test: Torald Sollman, in the *Journal A. M. A.* for July 21st, writes upon the crucial test of therapeutic evidence. If the patient improves after taking a remedy, we do not yet know that he improved on account of the remedy. The *post hoc* type of reasoning or logic is not respectable, but it is all too apt to creep in unawares, unless one takes great precautions indeed. Clinical evidence needs especially to be on its guard against this pitfall, for the conditions of disease never remain constant; nor is it possible to foresee with certainty the direction which they are going to take. It is just this point which makes the clinical evidence so much more difficult to interpret than laboratory evidence, in which the conditions can be more or less exactly controlled, and any changes foreseen. It is on this account also that clinical experiments must be surrounded with extra painstaking precautions. In brief, while "proof" of a remedy is on the patient, that is not the whole story, but merely an introduction. The real problem is to establish the causative connection between the remedy and the events. The imperfect realization of this has blocked therapeutic advance, has disgusted critical men to the point of therapeutic nihilism, and has fertilized the ground for the commercial exploitation of drugs that are of doubtful value or worse. Dr. Sollman has had this particularly impressed on him by his service in connection with the Council on Pharmacy and Chemistry. On the whole, it is usually possible to form a fairly definite estimate of the value of experimental data, but when one comes to the clinical evidence an entirely different atmosphere prevails. Often the best type of clinical reports generally lack one important essential, namely, an adequate control of the natural course of the disease. Since this cannot be controlled directly, it must be compensated indirectly. He mentions two available methods. The first is the statistical, in which alternate patients receive or do not receive the treatment. The second consists in the attempt to distinguish unknown preparations by their effects—the method that might be called the "comparative method" or the "blind test." In this the patient, or a series of patients, is given the preparation to be tested, and another inactive preparation, and the observer aims to distinguish the two preparations from their effects on the patient. He concludes that the final and crucial test of a remedy is on the patient; but the test must be so framed as to make it really crucial. Most clinical therapeutic evidence falls far short of this. The "blind test" is urged to meet the deficiencies.

The U. S. Pharmacopoeia: In the *Medical Record* for August 18th, Horatio C. Wood, Jr., comments on the latest or ninth revision of the Pharmacopoeia. As to the deletions, a large number of worthless herbs, as camomile, boneset, horehound, etc., have been omitted. Nine salts of iron have been dismissed; they were evidently quite needless, as we still have ten preparations of this metal available. An omission about which there has raged and still is raging an acrimonious discussion is that of the alcoholic beverages, wine and whiskey. Personally he is convinced that under circumstances alcohol is a valuable therapeutic remedy,

but his belief in its medicinal usefulness does not necessarily imply the need of a Pharmacopoeial standard for whiskey. More interesting than the deletions, however, are the innovations. Perhaps the most important of these is the official recognition—he believes for the first time in the history of the world, certainly in the history of this country—of physiological standards for such drugs as digitalis, cannabis indica, hypophysis and suprarenal. In the cases of aconite, digitalis, strophanthus, squill and suprarenal, the biological standard is advised, but is made compulsory only in the cases of cannabis and solution of hypophysis. Of the newer synthetics added are two morphine derivatives, ethylmorphine and diacetylmorphine. He advises forgetting the trademark names of these two popular and useful drugs, and points out how they differ from each other as well as from morphine. A less widely known novelty is sodium perborate. This compound in aqueous solution yields up one atom of oxygen, which unites with the elements of water to form hydrogen dioxide, leaving behind the alkaline sodium pyroborate, not the sodium borate of the Pharmacopoeia commonly called borax. This salt offers a means of preparing extemporaneous solutions of peroxide of hydrogen. For convenience of remembering we may so use from one-half to one dram of the salt per ounce. The solution must be freshly prepared immediately before use. The Pharmacopoeia now recognizes two forms of liquid petrolatum, a light one intended for use in atomizers, and a heavy viscid oil for internal use. Phenolphthalein, formerly in the appendix, is now in the body of the work, because of its popularity as a cathartic. An interesting addition is phenylcinchonic acid, introduced years ago by Nicolaier. He found that it greatly increased the amount of uric acid in the urine, and this has been confirmed in both gouty and normal men and for all sorts of diets. There is some clinical testimony of its value in gouty conditions. Another new agent used in uterine hemorrhage is cotarnine hydrochloride, whose trade name is stypticin or styptol.

Strophanthus: In the August number of the *Therapeutic Gazette*, L. W.

Rowe considers the influence of the method of administration upon the degree of toxicity of strophanthus preparations. The use of strophanthus in therapeutics as a heart tonic is becoming more widespread from year to year. Digitalis has for a long time been the favorite cardiac remedy and still maintains a high degree of usefulness, but its slow and more cumulative action contrasted with the more rapid and more certain effect of an active principle as strophanthin is largely the reason for the increased use of strophanthus preparations. There is another factor which has greatly influenced the use of heart tonics in general, and of strophanthus in particular, and that is the increasing use of our only means of determining the activity of these preparations, namely, physiological standardization. Since 1897 and 1898, when Houghton introduced the first satisfactory quantitative method of physiologic assay for heart tonics, their standardization by physiologic methods has been slowly taken up and perfected, so that by its aid the manufacture of comparatively uniform strophanthin and tincture strophanthus has been accomplished. The greatest trouble and confusion was found, however, when clinicians began to follow the general trend of recent medication and administer strophanthin hypodermically or intravenously. Hatcher and Bailey, in 1908, called attention in a general way to the increased toxicity of strophanthin when used hypodermically. This warning was apparently not heeded, as the physician in most cases has followed the generally accepted rule of using about half the usual oral dose for each hypodermic or intravenous administration. *The serious difficulties encountered in hypodermic usage demand that further attention be drawn to the somewhat peculiar action of strophanthus preparations in order to emphasize and thereby minimize the danger attending their hypodermic or intravenous administration.* With this purpose in mind he carried out a series of experiments as a result of which he concludes:

(1) The subcutaneous and intravenous toxicities of the four strophanthus preparations tested are from 45 to 100 times as great as their oral toxicities.

(2) It has been demonstrated that the satisfactory oral dose is not a true index of the potency of strophanthin.

(3) To obtain the most uniform and satisfactory therapeutic results strophanthus preparations should be given hypodermically. Extreme caution should be used in selecting a sufficiently small dose for subcutaneous and intravenous injection.

Achylia Gastrica: In the August number of the *American Journal of the Medical Sciences*, M. H. Gross and I. W. Held treat of achylia gastrica, by which they understand a condition which manifests itself clinically by a persistent absence of free as well as combined hydrochloric acid, and also by the absence of gastric ferments. Treatment must be strictly individualized, and for the sake of clearness, cases should be separated from the therapeutic standpoint into several groups: First, when the symptoms point to a general neurosis with corresponding gastric symptoms. The achylia is the expression of a general neurosis and the treatment must therefore be directed against the nervous system with moderate and appropriate attention to the stomach. Such patients should lead a most regular life and avoid toxic agents, as tobacco and alcohol. The dietetic regime should not be so strict as to make the patient everlastingly dependent. Proper attention should be paid to the teeth, and the food should be well chewed. To the second group belong cases in which the gastric symptoms predominate (continuous burning right after meals, pressure and even pain). It is best to divide the dietetic treatment into two parts—that of sparing the digestive organs, and of exercising those organs. The sparing diet depends on the severity of the symptoms. When these are very distressing it is necessary to keep the patient on warm milk, cream and yolks of eggs for four or five days, then gradually progress to thin cereals in milk, toast and butter to end of first week, which should be spent in bed. During the second week two or three eggs may be given daily and cereals in the form of light puddings or custard. As improvement progresses a more liberal diet is partaken of. Medicinally the most important part is the hydrochloric acid and pepsin. We are aware that these agents do not benefit by replacing the missing secretions, and the fact that clinically improvement follows their use must depend on the improved motility they bring about. Acid, even in small doses, excites peristalsis, thereby mechanically influencing digestion. Physiological experiments show that the use of stomachics and bitters are not only not beneficial, but are even injurious. Many clinicians, however, of great experience (Ewald, Boas) still claim favorable results. With a tendency to constipation a course of olive oil enemata lasting from two weeks to a month should be employed and repeated as required. With diarrhea present, the diet should be restricted. Astringents are here indicated, as bismuth subnitrat, dermatol, etc., and of antiseptics, thymol, resorcin, or beta-naphthol are best.

Enterocolitis: The *Medical Council* for August treats editorially of the dietetic treatment of enterocolitis. Physicians are often misled by foul-smelling stools, while attaching less significance to fermenting and sour ones which do not assail the senses. The former are due to decomposing proteid, and a dose of oil may clear the case up promptly; but the fermenting and acid stool is a dangerous signal, especially with bottle-fed babies. It is not cleared up by a dose or two of medicine. In fact, drugs are of comparatively little importance in the treatment until after the cause, defective diet, is regulated. These cases go on to the fever of intoxication, tissue dehydration and demineralization, great loss in weight, and perhaps coma and death. The cure in breast-fed babies is to regulate the mother's

diet and exercise. In bottle-fed babies, severe attacks under six months are apt to be fatal, and artificially fed infants bear an attack poorly. The hunger period of 24 to 36 hours, with barley water and a little diluted egg-albumin containing a little brandy. Acute milk infection is not enterocolitis, though it has points in common with it. Acute milk infection is almost wholly a summer disease, and requires heroic treatment with absolutely no milk for a period. Enterocolitis cases may, as soon as initial symptoms subside, have a little milk. In older children in an acute attack, wash out the stomach, if possible, and follow with a complete fast, resuming feeding gradually with plenty of boiled water. One of the most futile of things is the treatment of enterocolitis almost exclusively with drugs. Drugs are, of course, of value, but diet is essential.

Hormone Therapy: Siegfried Block, in *Amer. Med.* for June, writes upon hormone therapy in children's diseases. Osteomalacia, whose symptoms we all know, has as its main cause an excessive excretion of calcium salts from the body. Many of these cases do not improve much even if an excess of these deficient salts are given. In the adult, ovariectomy is often done because the ovaries when hyperactive produce the condition at times. The adrenal glands counteract this activity, and in children, even when lime salts are given, it is wise to give these glands in maximum doses. Robin of Paris believes that the lime salts of the human body are chemically different from other lime salts, and gives ground bone rather than any other kind of calcium medication. Block details an aggravated case of osteomalacia in a child six years of age. Calcium lactate, with hypodermic injections of pituitary and thyroid, almost cured the case in two years. In this case the bones were so soft that one could bend them easily. In rachitis, another form of improper calcium metabolism, similar treatment must be thought of to get lasting results. In recent years we have come to believe that a combination of glands is what is at the bottom of the faulty metabolism. Carnot used mixed extracts with startling results. Woodward, of St. Bartholomew's Hospital, London, claims universal improvement with a combination of one grain each of thyroid, thymus, pituitary and adrenal glands. Urinary incontinence is another important matter, and it is evident that the ductless glands play a role in the conditions. Diabetes mellitus is due to faulty carbohydrate assimilation. With the evidence at hand it seems rank injustice to treat a patient with diabetes mellitus, no matter what the age, without pancreatic extract. When we come to diabetes insipidus, Francesco, Cushing, Timme and Hofstadter all state that these cases have been absolutely cured with injections of pituitrin. In an adult, pituitary gland alone did no good, but when adrenaline and ergot were combined the cure was effected. This case has remained well for several years. Liver extracts seem to be of immense service in those children who suffer much from urticarias, skin hyperaemias or localized edemas to which no definite local cause can be attributed. One lesson we should take home is that very few of the disorders are due to a single gland, and careful study of the case, with frequent changing of the pluriglandular therapy often gives best results.

The Pneumonias: In the *Medical Review of Reviews* for July, Solomon Solis Cohen presents a series of conclusions concerning the treatment of the pneumonias, especially by quinine compounds and serums. (1) Serums bacterins, toxic filtrates and cinchona derivatives are all of a certain degree of proved usefulness in the treatment of pneumonias. (2) In hospitals wherein type diagnosis can be made promptly and serums obtained early and in sufficient quantity, the specific serums should be used. Under other circumstances polyvalent serums may justifiably be tried. (3) When serums are not available—and also when they are available—a cinchona derivative, preferably a highly soluble salt of quinine, should be given as soon as the diagnosis is made and by the intravenous route if practicable; when this method is not practicable, by the intramuscular route:

and when circumstances do not permit either form of injection, by the mouth. Frequently the use of quinine *per os* is sufficient to keep up the effect after the initial injection, intramuscular or intravenous, has made an impression. (4) The most active quinine salts are quinine and urea hydrochloride, quinine chlorhydrosulphate, quinine hydrobromide, quinine dihydrochloride, and quinine dihydrobromide. (5) The initial dose for a young, robust adult should be not less than 25 grains (1.5 grams) by the mouth, 15 grains (1 gram) by the skin or muscle, and 10 grains (0.6 gram) by the vein. Larger doses may be used in cases of severe infection, with temperature exceeding 40° C. (104° F.). Subsequent doses will depend largely upon the effect of the first dose, and will vary with individual conditions. A single dose may prove sufficient, or four or five daily may be needed; but the patient must be brought promptly under the influence of the drug and kept so for three days. As much as 45 to 75 grains (3 to 5 grams) of quinine and urea hydrochloride will need to be given by the vein, or twice that quantity intramuscularly, during 72 hours. In some cases more is required, in some less. When used orally to supplement injections, 5 to 10 grains (0.3 to 0.6 gm.) should be given hourly to every fourth hour. (6) Cocain pituitrin and other pressure-raising agents; digitalis, camphor and other cardiants; opium, atropin, strychnin, and other agents if required. Oxygen has distinct indications, best given freely and before its need is evident. Open air, quinine and free administration of alkaline solutions (especially chlorid containing). The bacterins are of distinct advantage in unduly prolonged cases, and when resolution is delayed. Good nursing is essential.

NEW AND NONOFFICIAL REMEDIES

Neodiarsenol.—Neodiarsenol has the composition, physical and chemical properties and action, uses and dosage as given for neosalvarsan in New and Nonofficial Remedies, 1917. Neodiarsenol is supplied in ampoules containing, respectively, 0.15, 0.3, 0.45, 0.6, 0.75 and 0.9 Gm. neodiarsenol. Neodiarsenol is accepted for New and Nonofficial Remedies, as the available supply of neosalvarsan seems to be insufficient to meet the demand, and this preparation conforms to the rules of the Council. Neodiarsenol is made in Canada under a license issued by the Commissioner of Patents of Canada. The Farbwerke-Hoechst Company holds the sale of neodiarsenol in the United States an infringement of its rights, and has stated that all violations of its rights will be prosecuted. The Diarsenol Company Limited, Toronto, Canada (*Jour. A. M. A.*, Aug. 4, 1917, p. 383).

Gastron.—A solution of the gastric tissue juice obtained by direct extraction from the mucosa of the fresh stomach of the pig. It contains 25 per cent by weight of glycerin, 0.25 per cent absolute hydrochloric acid, and 1 Cc. is capable of dissolving 200 Gm. of coagulated egg albumin. Gastron is designed for use in disorders of gastric function. Fairchild Bros. and Foster, New York (*Jour. A. M. A.*, Aug. 25, 1917, p. 645).

During August the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Nonofficial Remedies:

Calco Chemical Company:

Betanaphthol Benzoate—Calco.

The Diarsenol Company Limited:

Neodiarsenol Ampoules, 0.15 Gm.

Neodiarsenol Ampoules, 0.3 Gm.

Neodiarsenol Ampoules, 0.45 Gm.

Neodiarsenol Ampoules, 0.6 Gm.

Neodiarsenol Ampoules, 0.75 Gm.

Neodiarsenol Ampoules, 0.9 Gm.

Fairchild Bros. & Foster:

Gastron.

Hoffman-LeRoche Chemical Works:

Tyramine—Roche.

Maltbie Chemical Company:

Calcreose.

Calcreose Solution.

Calcreose Tablets, 4 grains.

The Academy of Medicine of Cleveland

THE ACADEMY OF MEDICINE

A general meeting of members of the medical profession of Cuyahoga County was held September 21st, 1917, at the Cleveland Medical Library.

At a former meeting of the Academy of Medicine a committee was appointed by the chairman, R. K. Updegraff, to formulate a plan by which the business and home interests of those enlisting in the war activities of the U. S. A. would be adequately taken care of during their absence.

This committee was composed of Dr. M. J. Lichty, Chairman, Dr. N. M. Jones, Secretary, and Drs. W. W. Humiston, C. E. Follansbee and A. Peskind. The results of their efforts consisted in the presentation to those in the medical profession at a meeting of the Academy of Medicine of two plans, namely: First, the creation of a fund by monthly contribution from members remaining at home to afford relief for the men at the front or their families, such relief being necessitated by the doing of their patriotic duty. Second, the conservation of the practices of these men who have enlisted.

Last July the committee, in order to get a working basis, sent out a questionnaire concerning these plans and received a response from an overwhelming majority in favor of the adoption of the plans. In further consideration of the plan it was decided that an invitation should be extended the homeopathic physicians of the country as well as to the entire list of general practitioners and specialists. In furtherance of this suggestion the following were invited to meet with the committee: Dr. J. C. Wood, Dr. J. R. Horner, Dr. A. B. Schneider and Dr. B. B. Kimmell.

On inquiry it was learned that the committee or managers of the proposed fund would need to become incorporated. The necessary legal work required for incorporation will be done by Squire, Sanders & Dempsey, Cleveland, gratis. The incorporation of this committee, under bond, will be carried out as soon as practicable.

Chairman Lichty asked for any comments, criticisms or questions, among which were: 1. What will be the *pro rata* share or amount that those remaining at home should pay? To this the committee said that it had been unable to set any definite amount, but considered a minimum of \$2 to \$10 a month as the best solution of the problem and that anyone wishing to give more might do so, the entire matter being left for decision to the subscriber himself. Those few who expressed themselves as not wishing to co-operate would, of course, be dropped from the enterprise. 2. How far is the conservation of practice to be extended? Such conservation will cover all general and homeopathic practitioners of the county. A suggestion at this point was offered that it would be well to advertise the fact that 40 per cent of the physician's fee is to go to the patient's former physician. Others thought this unnecessary, since the 40 per cent would make the patient feel that he is still contributing to the welfare of the enlisted doctor and more likely to return to him when he returns to civil practice.

The committee has already had a number of neat and attractive cards printed, saying in substance that the physician displaying this card had

agreed to refund 40 per cent of the patient's charge to the enlisted physician or his dependents. These cards are to be posted conspicuously in physicians' offices. Letters have also been printed which the enlisted doctor may send to those that he may consider his families and acquainting them of the plan.

Drs. Wood, Hamann, Hartzell, Horner and Follansbee discussed the questions and gave their opinions of the plans. In Dr. Jacob's comment on the plans, a question of importance was brought up: Will the amount from the fund to the recipient be subject to interest? The result of the discussion of this point was that interest as well as the payment of the principal would be given to the enlisted physician on his return. In connection with this Dr. Follansbee cited the action of the American druggists at the time of the San Francisco earthquake, when they subscribed over \$500,000 for the relief of the druggists of that city. All the money was used to help these stricken men and to date only \$600 is outstanding, the rest having been returned.

Dr. Stern offered an amendment that the committee be made self-perpetuating. This brought out a further amendment to the amendment that the present committee serve for six months and then be subject to re-election by those who have contributed to the fund.

Dr. Peskind spoke on the functions of the committee.

BOOK REVIEWS

The Internal Secretions, Their Physiology and Application to Pathology. By E. Gley, M. D., Member of the Academy of Medicine of Paris; Professor of Physiology in the College of France, etc. Translated from the French and edited by Maurice Fishberg, M. D., Clinical Professor of Medicine, New York University and Bellevue Hospital Medical College; Attending Physician, Montefiore Home and Hospital for Chronic Diseases. Authorized translation. New York, Paul B. Hoeber, 1917. Price, \$2.00.

This little work of 240 pages presents the problem of the internal secretions in a most interesting manner. Dr. Fishberg in the preface states that the work is thoroughly up to date, pointing out not only what we actually know in this very promising field, but also being careful to point out what we do not know. The ground is quite completely covered in a general way, and the work proper embodies three chapters with their subdivisions. The first considers the origin and development of the internal secretions; the second treats of the distinctive characteristics of the internal secretory glands, and the principal products of their activities, while the third discusses the function of the internal secretory glands. Claude Bernard and Brown Sequard are recognized as the true founders of the doctrine of internal secretions. The products of internal secretion are classified under four heads (1) Nutritive substances. (2) Morphogenetic substances (hormones), including substances serving as tissue builders in the course of autogenetic development. (3) The hormones which provoke functional activity, as secretin and adrenalin, and (4) the parhormones, which include excretory products. The reciprocal relations of various glands are mentioned, although he criticizes the insufficiently demonstrated theory upon which such relation stands. The thanks of the profession are due Dr. Fishberg for his translation of so satisfactory a contribution to rational organotherapy.

J. B. McG.

Handbook of Suggestive Therapeutics, Applied Hypnotism, Psychic Science. A Manual of Practical Psychotherapy, designed especially for the Practitioner of Medicine, Surgery and Dentistry. By Henry S. Munro, M. D., Omaha, Nebraska. Fourth edition. Revised and enlarged. C. V. Mosby Company, St. Louis, 1917. Price, \$5.00.

This work, now in its fourth edition, the first having been published ten years ago, presents quite fully the practical as well as scientific side of the subjects of which it treats. The present volume comprises 480 pages, divided into thirty chapters, of which two are new—those devoted to "Suggestions in Dentistry," and the "Human Libido." He refers to Crile's work on anociassociation as "incontrovertible evidence that the principles of suggestion, as a practical, trustworthy therapeutic measure, are fixed and definite." He believes that we unconsciously use suggestive therapeutics in every phase of our daily work, and in fact the field of psychotherapy is quite completely considered. Indications for the successful management of the psychoneuroses are given, and on the whole the book is one of the best in its field and a trustworthy guide along the lines which the title implies.

J. B. McG.

ACKNOWLEDGMENTS

The Fundus Oculi of Birds, Especially as Viewed by the Ophthalmoscope. A Study of Comparative Anatomy and Physiology. By Casey Albert Wood. Illustrated by 145 Drawings in the Text; also by 61 colored paintings prepared for this work by Arthur W. Head, F. R. S., London. The Lakeside Press, Chicago, 1917. Price, \$15.00.

The Practical Medicine Series, Vol. IV, Gynecology. Edited by Emilius C. Dudley, A. M., M. D., Professor of Gynecology, Northwestern University Medical School; Gynecologist to St. Luke's and Wesley Hospital, Chicago, and Sydney S. Schochet, M. D., Instructor in Gynecology, Northwestern University Medical School; Adjunct Gynecologist, Wesley Hospital, Chicago, 1917. The Year Book Publishers, Chicago. Price, \$1.35.

The Practical Medicine Series, Vol. V, Pediatrics and Orthopedics. Edited by Isaac A. Abt, M. D., Professor of Pediatrics, Northwestern University Medical School; Attending Physician, Michael Reese Hospital; with the collaboration of A. Levinson, M. D., Associate Pediatrician, Michael Reese Hospital. **Orthopedic Surgery.** Edited by John Ridlon, A. M., M. D., Professor of Orthopedic Surgery, Northwestern University Medical School, with the collaboration of Charles A. Parker, M. D. Series 1917. The Year Book Publishers, Chicago. Price, \$1.35.

The Prescription; Therapeutically, Pharmaceutically, Grammatically and Historically Considered. By Otto A. Wahl, Ph. G., M. D., Professor of Materia Medica, Pharmacognosy and Botany in the St. Louis College of Pharmacy; Member of the Committee for Revision of the Pharmacopoeia of the United States, 1880-1890 and 1890-1900; Second Vice-President of the Convention for the Revision of the Pharmacopoeia from 1900-1910; Presiding Officer of the United States Pharmacopoeia Convention of 1910; one of the authors of the "Companion to the United States Pharmacopoeia"; Author of "Handbook of Pharmacognosy," "Lessons in Latin," etc. Fourth and Revised Edition. C. V. Mosby Company, St. Louis, 1917. Price, \$2.50.

Diseases of the Skin. By Richard L. Sutton, M. D., Professor of Diseases of the Skin, University of Kansas School of Medicine; Former Chairman of the Dermatological Section of the American Medical Association, etc. With Eight Hundred and Thirty-three Illustrations, and Eight Colored Plates. Second Edition. Revised and Enlarged. C. V. Mosby Company, St. Louis, 1917. Price, \$6.50.

MEDICAL NEWS

Red Cross Ambulance Company No. 4.—The Cleveland Unit of 163 enlisted men and four officers from Western Reserve University, organized last March, have finally been ordered to the Training Camp of the United States Army Ambulance Service at Allentown, Pennsylvania.

Aside from their further training for eventual service abroad, the men will have the added opportunity of taking part this fall in the many athletic events which are scheduled at this camp.

Cleveland Red Cross Ambulance Company No. 4 is under the command of Lieut. Harold O. Ruh, Lieut. Joseph E. McClelland, Lieut. Roy P. Forbes and Lieut. Frank S. Gibson.

Mental Hygiene War Work.—Attached is a report recently submitted to the Surgeon General of the Army by the Committee on Clinical Methods and Standardization of Examiners and Reports, which is a sub-committee of The Mental Hygiene War Work Committee of the National Committee for Mental Hygiene. The latter, as you probably know, has been authorized by the Surgeon General to organize and equip neuro-psychiatric hospital units to be attached to the base and other military hospitals of the government.

You will be interested in the report, as it represents the first attempt ever made in organizing an army to take into consideration the neuro-psychiatric qualifications of men. The report has been accepted by the Surgeon General and will be used as a basis of an official circular of the department.

In detailing psychiatrists and neurologists to special duty with the armies, the Surgeon General has had in mind (1) the proper care and treatment of soldiers who become incapacitated through mental or nervous disease; (2) the special examination of recruits in the training camps in order that those who because of neuropathic or psychopathic conditions are unfit for military duty, may be identified and discharged from service.

Until the troops move abroad the chief and most important responsibility of the military psychiatrists and neurologists will be the special examination of recruits. It is obvious that no man should be eliminated from the service who is fit to render a valuable service in this emergency. On the other hand, it is quite apparent that individuals suffering from certain forms of nervous and mental diseases should not be permitted to enter into service, as experience with the American armies has shown quite conclusively that such individuals are not capable of military service even in time of peace. and experience in the European armies has shown beyond question that such individuals are not able to withstand the rigors of modern warfare. At critical times such individuals go to pieces, with the result that the military force is weakened, is hampered in the free performance of its function, and the Government is likely to be burdened after the war with the care of a large number of invalids.

At the request of the Surgeon General, the question of those who should be excluded from military services on account of mental and nervous disease has been carefully studied, and with the approval of the Surgeon General we would suggest that the following general outline be followed in determining this matter. It is important that the potential as well as the actual condition of the recruit be kept in mind. For this reason emphasis has been laid upon the early symptoms of disease. Likewise, attention has been called particularly to those diseases which are most likely to be met and which have not very obvious symptoms, but which, nevertheless, can be diagnosed relatively easily and with considerable certainty. It is not to be assumed that other neuropathic and psychopathic conditions when found are not cause for exclusion. Most of these, however, such as multiple neuritis, various forms of paralysis, hemiplegia, cranial nerve palsies and peripheral neuritis, have such striking symptoms that they are likely to be recognized before they come to the attention of the neurologists and psychiatrists.

RECRUITS TO BE EXCLUDED

I. Nervous Diseases

(a) *On the Basis of Disease.*

1. Tabes. (Look for Argyll-Robertson pupils, absent knee and ankle jerks, ataxia of station and gait.)
2. Multiple Sclerosis. (Look for absent abdominal reflexes, nystagmus, intention tremors.)
3. Progressive Muscular Atrophy and Syringomyelia. (Look for fibrillary tremors; atrophy in the small muscles of the hand and of the muscles of the shoulder girdle; sears on forearm and fingers caused by burning; deformity of feet.)
4. Epilepsy. (Look for deep scars on tongue, face and head; voice. Where diagnosis depends only upon history of epileptic attacks given by the patient, the latter should be asked to give the address of the physician who has treated him. This history must then be verified by a letter from the physician.)
5. Hyperthyroidism. (Look for persistent tachycardia, exophthalmos, tremor, enlarged thyroid.)

(b) *On the Basis of Symptoms or Combination of Symptoms or History.*

1. Unequal pupils; irregular pupils; Argyll-Robertson pupils.
2. Nystagmus (in one not in albino); absent abdominal reflexes; intention tremors.
3. Absent knee jerks associated with some other organic neurologic symptom.
4. Exaggerated tendon jerks; Babinski.
5. Disorders of station or gait.
6. Disorders of speech (on test phrases); facial tremor; one other organic neurologic symptom. (Stammering and stuttering *per se* is not significant of an organic neurologic condition. Stammerers and stutterers are rejected by regulations. See form No. 94777.)
7. History of Epilepsy. (Ask the recruit to give the address of the physician who has attended him; this information to be verified by letter.)

II. Mental Diseases

(a) *On the Basis of Disease.*

1. General Paralysis. (Look for Argyll-Robertson pupils, speech defect consisting of distortion of words, writing defect consisting of distortion of words, facial tremor in showing the teeth, euphoria, and marked discrepancies in giving facts of life.)
2. Dementia Praecox. (Look for indifference, ideas of reference, feelings of the mind being tampered with (*e. g., ideas of hypnotism*), auditory hallucinations, bodily hallucinations such as electrical sensations or sexual sensations, meaningless smiles; in general, inappropriate emotional reactions and lack of connectedness in conversation.)
3. Manic depressive insanity. Look for mild depressions with or without feeling of inadequacy or mild manic states with exhilaration, talkativeness, and over-activity.)

(b) *On the Basis of Symptoms or Combination of Symptoms or History.*

1. History of previous mental illness. (Ask the recruit to state when and where he had such illness, in what hospital he was observed or treated, or by what physician he was attended; this information to be verified by letter.)

III. Psychoneroses and Psychopathic Characters

(Look for phobias, morbid doubts and fears, anxiety attacks, fatigue-ability, hypochondriasis, compulsions, homosexuality, grotesque lying, vagabondage.)

IV. Chronic Alcoholism

(Look for suffused eyes, prominent superficial blood vessels of the nose and cheek, flabby, bloated, reddened face, purplish discoloration of the mucous membrane of the pharynx and of the soft palate; also ashen complexion and clammy skin; muscular tremor in the protruded tongue and extended fingers (noticeable also in lack of control when the applicant attempts to sign his name); emotionalism, prevarication, suspicion, auditory or visual hallucinations, paranoid ideas.)

V. Mental Deficiency

(Look for defect in general information with reference to native environment: ability to learn, to reason, to calculate, to plan, to construct, to compare weights, sizes, etc.; defect in judgment, foresight, language, output of effort; suggestibility; stigmata of degeneration, muscular incoordination.) (Consult psychometric findings.)

VI. Drug Addiction

(Look for pallor, dryness of skin, flippancy, mild exhilaration (if under the influence), cowardly, cringing attitude, restlessness, anxiety (if without the drug), distortion of the alae nasi, contracted pupils (morphine), or dilated pupils (cocaine), dirty deposit at junction of gums and teeth, bluish and whitish needle scars on thighs and arms.)

(Signed) August Hoch, M. D., Director, Psychiatric Institute, Ward's Island, N. Y. C.; Adolph Meyer, M. D., Director, Phipps Psychiatric Clinic, John Hopkins University, Baltimore, Md.; Thomas W. Salmon, M. D., Medical Director, the National Committee for Mental Hygiene, New York; Pearce Bailey, M. D., Chief of Clinic, N. Y. Neurological Institute, New York; E. E. Southard, M. D., Director, Psychopathic Hospital, Boston, Mass.; Albert M. Barrett, M. D., Director, State Psychopathic Hospital, Ann Arbor, Mich.; William A. White, M. D., Supt., Government Hospital for the Insane, Washington, D. C.; Walter E. Fernald, M. D., Massachusetts School for the Feeble-minded, Waverly, Mass.; Joseph Collins, M. D., N. Y. Neurological Institute, New York; T. H. Weisenburg, M. D., President, American Neurological Association, Philadelphia; Robert M. Yerkes, Ph. D., Professor of Comparative Psychology, Harvard University, Cambridge, Mass.

Bulletins

1. The Mental Hygiene War Work Committee of the National Committees for Mental Hygiene is anxious to obtain the names of psychiatrists and neurologists who are willing to give part-time service in the examination of National Guard troops in their vicinity. The recent decision of the War Department to examine National Guard troops in their armories before sending them to camp, makes it necessary to secure at once a large number of examining physicians. To meet the situation the Surgeon General of the Army has arranged to accept for this work qualified physicians on contract. A physician may contract for specified duty, at a specified place, for a specified time, or for part-time. This latter provision makes it possible for many physicians who cannot take out commissions, or who cannot give all of their time to the work for a period of months, to give part-time each week. Further information can be received from Dr. Frankwood E. Williams, Vice-Chairman of the Committee, 50 Union Square, New York City.

2. Dr. Pearce Bailey, of New York, Chairman of the Committee on Furnishing Hospital Units for Nervous and Mental disorders to the United States Government, a sub-committee of the National Committee for Mental Hygiene, has been invited by the Surgeon General of the United States Army to accept a commission as major and to come to Washington as personal advisor to the Surgeon General in all matters pertaining to psychiatry and neurology. Major Bailey is now on duty in the Surgeon General's office. Dr. Frankwood E. Williams, Associate Medical Director of the National Committee for Mental Hygiene, has been appointed Vice-Chairman of the committee and placed in charge of the work in the New York office.

Dietitians' Conference in Cleveland.—A Dietitians' Conference is to be held at the Hollenden Hotel October 18th-20th. This conference of dietitians promises to be a most helpful as well as an important one, not only for the dietitians who come together to discuss the problems of the day, but also for the hospitals which they represent.

Dr. Hoover, of Cleveland, will give the address of welcome. Miss Ruth Wheeler, of the University of Illinois, will tell of some of the results of her work on Infant Foods and Infant Feeding; Miss Rena Eckman, formerly dietitian at the Massachusetts General Hospital—now of Columbia University—will tell some of the very interesting things she has found in hospitals in New York, and through her studies of foods. The Dietitian in National Work is to be discussed by Mrs. Caroline Bartlett Crane, of the Woman's Committee of National Defense of Michigan, and Miss Elva George, of the Red Cross Bureau, Washington, D. C., Miss Lenna Cooper, of Battle Creek, and Miss Mabel Little, of Cornell University Residential Halls, are well equipped to give helpful suggestions on economical buying and food conservation. Mr. John Willy, of the *Hotel Monthly*, has not only had many years' experience in the management of hotels, but believes in intelligent, scientific supervision of the commissary department. He and Miss Louise Pollock, formerly State Dietitian of Ohio—now of the City Hospital in St. Louis—are two people particularly fitted to give suggestions on the equipment and management of large kitchens.

Dr. Milner who has been connected with the Atwater Laboratories for many years; Dr. Nolan, editor of the *Interstate Medical Journal*; and Dr. Lewis, of the Laboratories of Battle Creek, will make very valuable contributions to the program, and help us decide how the dietitian may be the doctor's assistant, a subject which will be presented by Miss Lulu Graves, of Lakeside Hospital.

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THE UTILITARIAN CONSTRUCTION OF LIVING THINGS AND THE MEDICAL STUDENT*

BY T. L. PATTERSON, M. A., M. Sc., F. R. S. A.

Department of Physiology, Queen's University

KINGSTON, CANADA

The metaphysical conception of matter as that which combines or synthesizes the variable elements of existence, though in itself wholly indeterminate, takes its rise in the Platonic and Aristotelian notion of *ὑλη*, the passive or potential substance or substratum upon which form (*εἶδος*, *ιδέα*) acts to produce realities. According to the Lockian view, matter is the cause of sensation, but is not itself directly perceived. Physically, matter is anything which has extension, occupies space or is perceptible by the senses. It is that of which the sensible universe and all existent bodies are composed and with energy forms the basis of objective phenomena. The nature of matter is unknown. It belongs with the obscure things which the noted psychologist, Wm. James, idealized in verse as metaphysical reasoning:

"As in the night all cats are gray, so in the darkness of metaphysical criticism all causes are obscure."

Therefore, the physicist can only describe certain of its properties and speculate on its structure. Among some of the physical phenomena is the action of forces playing between two or more bodies which changes or tends to change their relative condition as to rest or motion; or more generally, any action which changes or tends to change any physical relation of a substance, whether mechanical, thermal, chemic, electric, magnetic or any other kind, as the force of gravity, cohesive force, etc.

*Address delivered at opening of the course in physiology (Session 1917-1918) at Queen's University, School of Medicine, October 1, 1917.

For W. Ostwald¹ stated that matter as a primary conception does not exist. It arises as a secondary phenomenon as a result of the constant "being together and coaction of certain kinds of energy."

All of the substance of the universe, which appeals to our senses, has weight and resistance, is called *ponderable* matter. It can be weighed in the balance. It is with this form of matter alone that physiology deals.

Astronomers, chemists and physicists assume the existence of another form of matter, the *imponderable* matter or ether, which is supposed to fill all space not actually occupied by atoms of ponderable matter. It transmits the sun's rays and light energy to us through space. This form of matter cannot be weighed in a balance, the conception of it is nothing more than a hypothesis. (Hypothesis, ὑπό = under, θέση = a position, a supposition or assumption set forth for discussion or demonstration—a theory assumed as true.) Imponderable matter then, is a thing of which our senses give us no conception or experience.

Energy is the capacity or power to do work. It may be manifest or not. For example, the pent-up energy of a charge of powder and the tremendous active energy of the explosion. We speak of a man of energy, but we do not expect the man to manifest his energy constantly. Energy may be latent or pent-up as potential energy, or it may take the form of active or kinetic energy. Light, heat, gravitation, electricity, and magnetism are forms of energy, and there are numerous others. This brings us to the transformation of energy. By this, is not meant the liberation of kinetic energy from potential, nor the storing up of potential from active or kinetic energy, but rather the changing of one kind of energy into another. Thus energy of gravitation of a falling body transformed into energy or heat. Modern research inclines to the view that energy is the most general substance, i. e., energy and matter are identical (Ostwald)².

Matter has mass, volume, weight, extent in space, form, impenetrability, and two different parts of matter cannot occupy the same space simultaneously.

All of these attributes we become conscious of through and by means of the energies. All that we know of the external world, we can represent and express in form of energies. Therefore the conception of energy takes in that of matter. In all transformations

of energy the total amount of force remains unchanged³. The activity of our apparatus of special sense is set up by the fact that work is done upon them, energy is spent upon them. What we hear is derived from the work which vibrations of air perform on the tympanic membrane and inner auditory apparatus. What we see is nothing but radiating energy which performs chemical work on our retina. Smell and taste are dependent upon performance of chemical work on special organs of mouth and nose. Everywhere we find that there are energies or forms of work, the activity of which gives us information how the external world is kept in order; what properties it has; and the totality of Nature, judged from this aspect, appears to us as an arrangement of energies distributed in time and space. We are capable of obtaining knowledge of these energies only to that limited extent in which it is possible for them to act upon sense organs, which are developed only for the perception of definite forms of energies. We can know nothing of those energies for the perceptions of which our organs are not equipped. There are sounds we do not hear; there are colors we cannot see; tastes we cannot taste, etc. These are capacities of the sense order which we do not possess and barely understand.

Imagine how small the world would appear if we had only one sense, say the sense of taste. All other forms of energy then could not reach our consciousness. The mouth cavity would then inclose everything of which we could have any knowledge. Only by the fact that various substances came into our mouth, would we become conscious of changes in the time of our existence. Somewhat larger would our world be, if we had in addition the sense of smell, and yet it would be very small indeed. An additional sense, that of touch, would permit of some orientation in space, as far as we could come into material contact with things about us. Thus far would the world enlarge a few cubic meters space perhaps. But very much wider does our world become by the sense of hearing; by the very rapid rate of propagation of air waves and the very small amount of energy needed to cause a sensation of hearing, our cognizant territory of the world would possibly embrace a kilometer or two. Of course the sense of hearing permits of no distinct determinations of locality in the external world, so that a mental picture of the world dependent upon sound, would be very hazy and diffuse with regard to space.

The sense which gives us the most remote and at the same time the most exact individual knowledge of the world is sight or radiat-

ing energy. Light measures space with extreme velocity and we are informed of sources of radiating energy from remote distances, from which no other form of energy could instruct us. Telescopes and photographic instruments are devices to collect the minutest rays in order to make them perceptible to the retina. By photography the weak rays, imperceptible ordinarily to the retina are allowed to accumulate and are stored up on the plate in form of chemic energy. This storing up of light and transformation into chemic energy is not possible in the retina except to a very limited extent.

So our inner picture of the world is dependent upon those energies which we are capable of receiving in such a way that this work reaches our consciousness as perception through a special sense.

Ostwald⁴ speculates in a fascinating manner on the capabilities of our consciousness and if we had more senses than we really possess. If we had an electrical sense and a temperature sense which could be acted upon great distances, we could be able to recognize in the Heavens and in earth, a much greater manifoldness of things and conditions, than come to our consciousness at present, and the electrical tones of a landscape, as well as the never ceasing temperature shadings, would awaken similar rich sensations in us, as we enjoy in the aspect of a glorious sunset or in the color toning of a blooming valley.

The Right Hon. A. J. Balfour⁵ in his article "Reflections Suggested by the New Theory of Matter," says it is the sense perceptions which tell us there is a physical world. It is on their authority that we learn its character. But in order of causation, they are effects due (in part) to the constitution of our organs of sense. What we see depends not merely on what there is to be seen, but on our eyes. What we hear depends not merely on what there is to be heard, but on our ears. Now, eyes and ears and all the mechanism of perception, have, as we know, been evolved in us and our brute progenitors by the slow operation of natural selection. And what is true of sense-perception is of course also true of the intellectual powers which enable us to erect upon the frail and narrow platform which sense-perception provides, the proud fabric of the sciences.

Physiology is not only the tabulation and determination, but also the explanation of the phenomena of life. It is impossible to trace back natural phenomena to their ultimate causes, even where large complexes of phenomena have been apparently explained by a law

that could be mathematically expressed like the movements of the planets from the law of gravitation. This law is in reality nothing else than the *shortest descriptive expression* of the phenomenon itself.

According to Darwin's law of inheritance, all the properties or qualities of the progenitor are repeated in the descendants, even the minutest details. But there is a certain latitude of deviation in every new generation. These properties by which a new individual experiences a variation of form or function different from that of his ancestor, constitutes at the same time a new center for the latitude of variation of *his* descendants. But in every new generation, certain acquired peculiarities will be of advantage for the preservation and propagation of their possessors, while other newly acquired peculiarities will be disadvantageous. It is evident that every advantageous variation has greater prospects of being transmitted to a large number of new descendants by inheritance. And by deviation of the center of variation, these qualities develop more and more. It is possible that those influences may be noticeable in a small number of generations, but they are irresistibly powerful in their influence when it is exerted in enormous lengths of time. The form and properties and function of living things can thus be changed entirely and in different directions, and thus creatures can be brought forward which are adapted to new conditions of environment, even into the finest details, i. e., they seem to be *constructed conformable to an object in view*, as if they were created for the very purpose which they are fulfilling; as if Nature had designed them "a priori" just for the purpose they are fulfilling and built them only for that object.

This idea, that living things are constructed conformable to the objects and functions they perform, is a very old one. Older physiologists treated the phenomena of life as if a thinking, designing, judging and providing spirit of mind had arranged the structure and function of all creatures in such a way as to insure the most lasting enduring existence and the most advantageous multiplication. We are very apt to fall into the error, assuming that all living creatures were originally and fundamentally called into existence with exactly the structure and function they possess at present. The evident conformability to purpose, of the organs and tissues, might lead us to conceive that living things were from the beginning of creation, made in the same idea to the object in view that we recognize today. Deep thinkers have long ago sought an explanation of

the wonderful utilitarian construction of organisms. There are many useful functions in the human body, for instance, at work constantly, and we do not even know them. They are going on without our knowledge, and yet they are immensely useful. Up to a few years ago, for example, we knew nothing of internal secretions, the secretion of the adrenal bodies, etc., and their far reaching influence on the tonus of arteries.

The most rational explanation of the origin and gradual development of each provision is that of Charles Darwin, namely, the *natural selection* (by inheritance) of those qualities that are useful, and the natural disappearance of those that are not useful. Of two organisms of slightly different construction, the one whose build is least detrimentally influenced by environment, or in other words, the one whose integrity is most enhanced by surrounding conditions outside of it, will have the greatest chance of an assured existence. Really it is the external influences working on organisms which cause "Natural Selection," so that eventually the structures which are most utilitarian for the permanent existence of a living organism, remain exclusively, as for example, the frog and salamander having both lungs and gills. Empedocles, 504 B. C.⁶, antedated Darwin, but it remained for Darwin to combine the idea of natural selection with that of inheritance, who showed that the simultaneous working of both factors insures a continuous effort at perfection in a species, when the external conditions remain constant; and even when they do not remain constant, when new relations in the environment occur, they are able to assure their existence by adaptation to the new conditions.

The theories of Natural Selection and inheritance give us a satisfactory insight into life conditions and the relations of existence of living organisms. We do not need to ask any more, why are the organisms constructed with such complexity, in order to maintain their life? Why did nature not prefer to renounce creating such complicated formations of difficult maintenance? The answer is—there was no choice or alternative given to the living creatures.

When the miner washes gold sand with streaming water, the current does not leave behind the grains of gold because they are precious, useful or beautiful, but because they sink to the bottom quicker, owing to their greater density. The quartz sand being lighter, is floated away. Just so the utilitarian construction of organisms is not developed because nature intends and purposes them for special objects or functions or uses, but in the processes of in-

heritance from one set of organisms to its progeny, the more permanent and useful formations remain, whilst the less permanent structures are floated away by the current of time; the permanent ones being useful for the preservation of the species. This is the meaning of the term "*Survival of the Fittest by Natural Selection, inheritance and processes of adaptation to environment.*"

These slow but ever changing variations in the protoplasmic construction of living things, are to a much lesser degree but examples of the more rapid pathologic changes that may occur in the tissues of man and other animals under the evil environments of disease which are of such prime importance to the student of medicine and the physician at large. Since physiology in its broad sense deals with the process of life, it must necessarily serve as the connecting link between the student's pre-medical scientific studies and the clinical work of the medical curriculum which is to follow. Therefore, a knowledge of things not only animate, but things inanimate, is necessary to constitute the bed-rock upon which the foundation of medical knowledge, represented by physiology, must be built, and it is only after the foundation is completed that it becomes possible to add the superstructure which is represented by pharmacology, experimental medicine, pathology and hygiene. For as Professor Macleod⁷ of Western Reserve University stated a few years ago, in his vice-presidential address before Section K, of the American Association for the Advancement of Science, "Physiology bears to medicine much the same relationship that anatomy bears to surgery, for the physiologist of today is the physician of tomorrow, just as the anatomist of today is the surgeon of tomorrow."

Since the application of physiology includes the physical, the purely biological and the chemical phenomena of life, the student must, above all things, be trained to be an investigator of the behavior of living things. He must bear in mind that the observations which he makes on the normal animal in the medical laboratory, are later to serve him as a standard with which to compare the behavior of the disturbed functions in disease. Even the physiological truths which the student may learn from the preliminary experiments on the nerve muscle preparation of the frog, although not of great physiological importance, at least from the medical standpoint, yet the facility in accurate experimentation which the student acquires, as well as the ability to use his results for inductively drawing general conclusions, is of the greatest importance. Following this training, he should be taught during his clinical years to study and treat

each patient as an individual problem, and just as he has learned in the physiologic laboratory that the same experimental condition may lead to different reactions in different animals, so must he expect to find among different patients, the same diversity in the symptoms which are produced by the same lesion. Students of medicine then, cannot become the best diagnosticians and therapeutists unless they keep in constant touch with physiology, for physiology means function, and function is always present in living matter; it is life. It is function which not only shapes, but creates the organ or suppresses it, being indeed at bottom a sort of reaction upon some stimulus, which stimuli are ultimately all fundamental, elementary forces, therefore few in number.

According to one estimate there are 400,000,000,000 cells in the average human body. Each one takes in food and grows, and does all those things that make a living being different from sticks and stones and other things that are not alive. When the cells are in health, the body is in health; and when the cells are dead the body is dead; for the life of the body is in the cells of which it is built. These living organisms known as human bodies are constantly immersed in a universe of matter and motion in which they are continually pushed and pulled, heated and cooled, buffeted and jostled about depending upon the conditions of their environment, and these forces playing upon the sensibility of our bodies may yield all manner of sensations as of weights, pressures, pushes and pulls, of intensities and extensities of brightness, sound, time, space, odors, tastes, etc., any one of which may lead to a disturbance of physiologic activity and the upsetting of the functional harmony of an organ, and this is especially true, when any of these influences become marked or excessive.

Therefore, every man should be trained in the right atmosphere to become a physiological diagnostician, or at least, he should be a skilled investigator of the conditions leading up to the symptoms rather than a student of symptoms alone, and thereby become a potential contributor to the advancement of clinical knowledge in medical education.

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TRACHEAL DISPLACEMENT AND COMPRESSION IN INTRATHORACIC DISEASE

BY V. C. ROWLAND, A. M., M. D.

Instructor in Medicine, Western Reserve University

CLEVELAND

The present paper is based on the belief that the frequency and degree of tracheal displacement and compression in intrathoracic disease are not generally appreciated and that many of the symptoms of the various forms of intrathoracic disease are directly due to the involvement of the trachea and that, further, a symptomatology of tracheal displacement *per se* may be established which is of practical value in diagnosis and treatment. Of the conditions in question, the most frequent is pulmonary tuberculosis in its various forms. It is not only in chronic fibroid tuberculosis that marked displacement of the mediastinum and trachea occurs. One must look upon the lungs as being suspended like a pendulum on the trachea, which is relatively fixed at the larynx, while the lower end is in a state of delicate balance between opposing forces—the elastic recoil of the lung and the negative pressure of the pleural cavities on the two sides of the thorax. From this conception we can understand how comparatively slight changes in the lung may shift the whole mediastinum and why the thoracic viscera tolerate extreme displacement as well as they do. In the milder grades of tuberculosis such as unilateral apical disease, there is very frequently a marked convexity of the trachea at the level of the lung apex and usually toward the affected side. This, of course, is best seen in the X-ray plate, and one should always carefully note the alignment of both walls of the trachea in comparison with the lateral borders of the vertebrae. Sometimes in addition to lateral displacement there is antero-posterior flattening of the trachea and rotation by traction in the direction of a tangent to its circumference. The tracheal mucosa is, of course, highly sensitive, and as a result there may be much dry irritative cough even in the entire absence of any bronchial catarrh. In a more marked fibroid process at the apex there may be extreme displacement of the trachea. In a case of this sort Wells reported that he had had a diagnosis of cavity for 15 years, when finally an X-ray was taken and showed the trachea drawn over under the part where he so long had elicited

tympany, tracheal tone change and bronchial breathing as signs of cavity. The apical lesion was scarred and healed. Obviously the more exact anatomical diagnosis is of value in the prognosis and management of such a case.

In pleurisy with effusion and empyema, of course, the displacement of the trachea and mediastinum is usually quite apparent. In the large effusions the angular displacement of the trachea may be extreme and it is interesting to observe that the type of cough produced may be the same as that in the fibroid tuberculosis just mentioned. Empyema with its greater tendency to encapsulation may produce even greater distortion of the trachea. A case of empyema in a child was shown by Dr. John Phillips at Lakeside Hospital a few years ago with the typical goose cough of aortic aneurysm. This was so marked that the nurses in the ward repeatedly commented about it. The X-ray showed an unusually sharp flexion of the trachea. The cough disappeared at once after thoracostomy. The so-called goose cough is not pathognomonic of aneurysm. Any pressure equally direct at the root of the trachea will produce it. Mediastinal tumor, tuberculous bronchial lymph glands, especially in children, Hodgkin's disease, and even the cold abscess of dorsal Pott's disease are some of the conditions to be thought of. At the upper aperture of the thorax large goitres especially when substernal are a common cause of irritative cough and the stridor of compression—more rarely enlarged thymus in infants.

However, it is not the object of this paper to enumerate the conditions that may be correlated in this way, but to point out the role the trachea plays in their symptomatology. The subjective symptoms of tracheal displacement and compression, independent of the underlying cause, are cough, dyspnoea, stenotic stridor and bronchial spasm. The cough is of the peculiar irritative type, usually dry and frequently more persistent than the ordinary physical signs account for. The so-called "nervous cough," especially of under-nourished young adults, is in some cases undoubtedly of this origin. The dyspnoea is due to tracheal stenosis and is seen most typically in the flattened trachea of substernal goitre. With this, also, there is marked stridor both on inspiration and expiration. Bronchial spasm may occur with tracheal irritation, especially at the root of the lung, as in tuberculosis of the bronchial lymph glands in children. True asthma may be largely an anaphylactic phenomenon, but there is abundant evidence that reflexes in the respiratory

tract are at least an exciting cause of bronchial spasm. Depending on the involvement of the recurrent laryngeal nerve there may be hoarseness and other voice changes, with all the conditions in question.

Objectively one may find signs of tracheal displacement at once by inspection of the neck. The patient should sit erect with the chin accurately in the midline. One can then note the position of the larynx and trachea in relation to the two sternocleido mastoid muscles. This was illustrated in a recent case at Lakeside Hospital. The larynx could be seen and felt snugly against the left sterno cleido mastoid muscle, with a distinct fossa on the right side. The X-ray showed marked displacement of the mediastinum. Laryngoscopically these changes are often still more apparent. Obliquity of the glottis and of the trachea, sometimes as low as the bifurcation, may be seen. The relation of the tip of the epiglottis to the arytenoids aids in judging the position. Sometimes there is a rotation of the vocal cords through an angle as high as 30 degrees. Obviously more or less paresis of the vocal cords is present with such distortions. In fact, laryngoscopic changes have been reported in as high as 27 per cent of cases in series of pulmonary tuberculosis.

On external examination of the chest, the trachea displaced sharply to one side may give tympany suggestive of cavity, as mentioned above. The greater proximity of the trachea normally to the right apex of lung gives an over-tone of tympany at times to the somewhat less resonant percussion note at this point. Wintnick's tracheal tone change over the upper lobe of lung may further simulate the signs of cavity. Displacement of the heart and whole mediastinum when present is, of course, corroborative evidence in the physical examination of the chest.

The X-ray plate is the best confirmation of the exact position of the trachea and of the degree of compression. Lung adhesions running from a suspicious but indefinite cloudiness at one apex to the trachea and pulling it from its vertical course make a very characteristic picture. The line of the trachea should be observed just as carefully as the line of the diaphragm in the X-ray plate. The slight displacement of the trachea also aids in the recognition of moderate dilatation of the aorta, not always so clear in the radiograph of a thick-chested patient.

The application of these facts may be carried still further. For example, in the treatment of pulmonary tuberculosis by arti-

ficial pneumothorax. Marked tracheal displacement is in general a contraindication, because it implies in all probability pleural adhesions, which prevent the inflow of gas, or, if torn, produce effusion. If the tracheal alignment is normal before the induction of pneumothorax, the displacement serves as a guide to some degree. In a negative way, the absence of tracheal displacement sometimes is of value in acute pleurisy, especially with pneumonia, when the possibility of empyema is present, by showing that there can be no great amount of fluid present. In a case of this type recently there seemed to be considerable displacement of the heart, but only about 100 c.c.'s of the fluid could be aspirated. The fluid was quite turbid and syrupy in consistency. The cell content was very high, mostly polymorphonuclears with a good many chains of diplococci. However, the X-ray showed the trachea accurately in the midline and a dense shadow on the affected side due to an infiltrated lung and thickened pleura. The heart must have been moderately dilated rather than displaced. The absence of much fluid of the above character was demonstrated by the prompt recovery of the patient.

Similar considerations come up in the management of a hemothorax which has taken on a new importance on account of the war. The new *British Journal of Surgery* has published statistical studies of gunshot wounds of the chest and hemothorax. Aspiration of large effusions is now recommended, since one-half to two-thirds of the cases escape infection under the present conditions of warfare and recover after simple aspiration. This was quite unlike the Boer War experience, when on account of lower velocity missiles and doubtless other factors, hemothorax was usually infected and the aspiration treatment condemned. The diagnosis of hemothorax rests largely on the displacement of the trachea and mediastinum. A condition called in the war reports progressive collapse of the lung from bullet wounds may simulate hemothorax in practically all other physical signs. Pneumonia may also be confused or associated with hemothorax. After a few days—by the time many cases reach the base hospitals—there may be considerable fever with a large hemothorax, even when entirely aseptic. Dyspnoea, of course, is frequent. Simple inspection and palpation at the root of the neck may give valuable information. In these cases prompt aspiration and early thoracostomy when infection is present have resulted in 90 per cent of recoveries at the base hospitals.

Further illustration of the far-reaching importance of knowing the anatomical position of the trachea in intra thoracic disease is superfluous. In conclusion we may simply repeat that:

1. The frequency and degree of tracheal displacement and compression are not generally appreciated.
2. It may sometimes be recognized in the absence of the X-ray.
3. It has a symptomatology of its own.
4. It has considerable application in diagnosis and treatment.

THE SPONTANEOUS EXPLOSION OF ARTIFICIAL EYES

BY ROY B. METZ, M. D.

Assistant Visiting Ophthalmologist, The Lakeside Hospital; Associate in Ophthalmology, School of Medicine, Western Reserve University

CLEVELAND

A patient wearing a Snellen artificial eye reported that a few hours before, as he was crossing a vacant lot, he had been shot, the bullet striking his artificial eye. Although he could see no one about, yet he had heard the sharp report of a gun, and had felt the impact of the bullet on this eye. Inspection of the eye and of the lids revealed no injury to either. An attempt was then made to remove the eye from the orbit, and a little difficulty was experienced. Usually an artificial eye can be removed very easily, but for a reason not apparent, this eye resisted removal. Finally the attempt at removal succeeded, and it was observed that a slight hemorrhage was occurring from that portion of the conjunctiva which had been in contact with the central portion of the posterior wall of the eye. Inspection of this portion of the eye revealed an irregular round opening of about 5 mm. in diameter. A search of the conjunctival sac did not result in the finding of the missing portion of the eye. However, when an examination of the interior of the eye was made, it was discovered that there were a number of small fragments of glass within, and when these were removed it was easily demonstrated that they together comprised the missing portion of the posterior wall of the eye. Quite apparently when the wall of the eye ruptured the fragments were forced into its cavity and the con-

junctiva was drawn into the eye by virtue of a vacuum which existed inside the glass globe. Retention of the conjunctiva in this hole in the eye explained the difficulty which had been experienced in removing the ball from the conjunctival sac, and also explained the slight injury to this portion of the conjunctiva.

At the time of this patient's visit the cause for the breaking of his eye was not clear. It could not be assumed that the eye had actually been struck by a bullet, and that without doing any damage whatever to the anterior portion a gunshot should have occasioned so peculiar a fracture of the posterior wall. It was later that the possibility of an explosion of the glass eye was considered.

Since the occurrence of the case just described, A. S. Rochester¹ has reported a similar case, his patient having experienced the explosion of two different artificial eyes within a short space of time. This author was able to collect among ophthalmologists the reports of eighteen such accidents. At a later date W. B. Weidler² reported the explosion of the glass eye of one of his patients.

There is much similarity in the history given by patients experiencing the explosion of an artificial eye. There is a sudden sharp report as though a pistol had been fired in close proximity to the head and at the same time a sharp pain is experienced in the affected orbit. At the time of the accident it was the impression of many of these patients that they had been shot in the eye, and the occurrence of some degree of hemorrhage from the orbit confirmed this belief. Some of the patients fainted from fright.

The damage to the tissues of the orbit from these exploding eyes is usually slight and only exceptionally have deep lacerations occurred. Usually a number of pieces of the glass are imbedded in the soft tissues and require removal.

The Snellen "Reform" eye consists of a globe of glass, this pattern having replaced the older solid-glass shell. In the manufacture of the Snellen improved type the back of the eye is sealed while the whole ball is at a white heat, resulting in the formation of a rather high vacuum in the interior of the globe when cooling has taken place. A sudden change in the temperature of a portion of the eye setting up unequal expansion or contraction may cause it to explode. The globe is built up of many different grades and colors of glass, and the walls vary greatly in thickness, so that proper annealing is very difficult of accomplishment. It was estimated by one manufacturer of these eyes that one-tenth of one per cent of them explode while lying packed away.

The observation was made that eyes in stock exploded more commonly during either very hot or very cold weather. In the series of cases collected by Rochester one-half of the explosions are said to have occurred on hot days. The eyes are corroded by the secretions from the conjunctiva of the wearers. Some persons are able to wear an eye for a couple of years before it becomes roughened, while much corrosion may occur in six months in other cases. Of eighteen explosions, four patients experienced it twice, this suggesting that such accidents may be of greater frequency in orbits the secretions from which exert a rapidly deleterious effect upon the glass.

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1214 Guardian Building, Cleveland, Ohio.

OLD THOUGHTS ON CURRENT TOPICS. SOME EXTRACTS FROM PARIS' PHARMACOLOGIA

COMPILED BY TORALD SOLLMANN

CLEVELAND

It always gives a curious sensation to find some problem that we are accustomed to consider modern, treated in a thoroughly modern manner by an author of long ago. Some references in Wall's "Prescription" call attention to Paris' Pharmacologia, a most excellent book, which was first published in 1812 and passed through many revisions.

The most valuable part of the book is the Introduction. "An analytical inquiry into the more remarkable causes which have, in different ages and countries, operated in producing the revolutions that characterize the history of medicinal substances." *Page 15.**

In this the author treats of problems as old as the medical profession—but like all fundamental problems, ever new. His remarks could be read, with very little change, at any current medical meeting; but instead of plagiarizing I would like to quote some selections, starting with the opening paragraph of the book:

The Rise and Fall of Drugs:

"Before I proceed to discuss the particular views which I am prepared to submit to the College, on the important but obscure sub-

*The paging is that of the 3rd Edition (1820).

ject of medicinal combination, I propose to take a sweeping and rapid sketch of the different moral and physical causes which have operated in producing the extraordinary vicissitudes which so eminently characterize the history of *Materia Medica*. Such an introduction is naturally suggested by the first glance at the extensive and motley assemblage of substances with which our cabinets are overwhelmed. It is impossible to cast our eyes over such multiplied groups without being forcibly struck with the palpable absurdity of some, the disgusting and loathsome nature of others, the total want of activity in many, and the uncertain and precarious reputation of all—or, without feeling an eager curiosity to inquire, from the combination of what causes it can have happened that substances, at one period in the highest esteem and of generally acknowledged utility, have fallen into total neglect and disrepute; why others, of humble pretensions and little significance, have maintained their ground for so many centuries; and on what account materials, of no energy whatever, have received the indisputable sanction and unqualified support of the best and wisest practitioners of the age. That such fluctuations in opinion and versatility in practice should have produced, even in the most candid and learned observers, an unfavorable impression with regard to the general efficacy of medicines, can hardly excite our astonishment, much less our indignation; nor can we be surprised to find that another portion of mankind has at once arraigned physic as a fallacious art, or derided it as a composition of error and fraud. They ask—and it must be confessed that they ask with reason—what pledge can be afforded them that the boasted remedies of the present day will not, like their predecessors, fall into disrepute, and, in their turn, serve only as humiliating memorials of the credulity and infatuation of the physicians who commended and prescribed them? There is surely no question connected with our subject which can be more interesting and important, no one which requires a more cool and dispassionate inquiry.” *Pages 15 and 16.*

The Backwardness of Materia Medica:

“In tracing the history of *Materia Medica* to its earliest periods, we shall find that its progress towards its present advanced state has been very slow and unequal, very unlike the steady and successive improvement which has attended other branches of natural knowledge; we shall perceive even that its advancement has

been continually arrested and often entirely subverted by the caprices, prejudices, superstitions and knavery of mankind. *Page 17.*

Empirical Experience:

"To such causes we must attribute the barren labours of the ancient empirics, who saw without discerning, administered without discriminating, and concluded without reasoning; nor should we be surprised at the very imperfect state of the *Materia Medica*, as far as it depends upon what is commonly called experience." *Page 18.*

Shoemaker, Stick to Your Last:

"Lord Bacon, with all his philosophy, betrayed a disposition to believe in the virtues of charms and amulets; and Boyle seriously recommends the thigh bone of an executed criminal, as a powerful remedy in dysentery." *Page 25.*

Extravagant Claims:

"By bestowing unworthy and extravagant praise upon a remedy, we in reality do but detract from its reputation and run the risk of banishing it from practice; for when the sober practitioner discovers by experience that a medicine falls so far short of the efficacy ascribed to it, he abandons its use in disgust, and is even unwilling to concede to it that degree of merit to which in truth and justice it may be entitled." *Page 33.*

Red Light Treatment:

"I apprehend that John of Gaddesden, in the fourteenth century, celebrated by Chaucer, must have been directed by some remote analogy of this kind (doctrine of signatures), when he ordered the son of Edward the First, who was dangerously ill with small-pox, to be wrapped in scarlet cloth, as well as all those who attended upon him or came into his presence, and even the bed and room in which he was laid were covered with the same substance, and so completely did it answer, say the credulous historians of that day, that the Prince was cured without having so much as a single mark left upon him." *Page 39.*

Therapeutic Fashions:

"Thus there exists a fashion in medicine as in the other affairs of life, regulated by the caprice and supported by the authority of a few leading practitioners, which has been frequently the occasion of dismissing from practice valuable medicines, and of substituting

others less certain in their effects and more questionable in their nature. As years and fashions revolve, so have these neglected remedies, each in its turn, risen again into favour and notice, whilst old receipts, like old almanacs, are abandoned until the period may arrive that will once more adapt them to the spirit and fashion of the times." *Page 43.*

Mercurial Inunction:

"Its effects, when applied externally, were well known to Theodoric the Friar, in the twelfth century, who described the salivation which mercurial frictions will produce." *Page 61.*

William Hunter, on the Stomach:

"Gentlemen, said he, 'Physiologists will have it that the stomach is a mill—others, that it is a fermenting vat—others again, that it is a stew-pan—but in my view of the matter, it is neither a mill, a fermenting vat, nor a stew-pan—but a STOMACH, Gentlemen, a STOMACH.'" *Page 69.*

Complexity Spells Obscurity:

"It is evident that the fallacies to which our observations and experience are liable with respect to the efficacy of certain bodies, as remedies, must be necessarily multiplied when such bodies are exhibited in a state of complicated combination, since it must be always difficult, and often impossible, to ascertain to which ingredient the effects produced ought to be attributed." *Pages 75 and 76.*

"The practice of mixing together different medicinal substances, so as to form one remedy, may boast of very ancient origin, for most of the prescriptions which have descended from the Greek physicians are of this description; the uncertain and vague results of such a practice appear also to have been early felt and often condemned, and even Erasistratus declaimed with great warmth against the complicated medicines which were administered in his time." *Page 76.*

"In modern Europe, the same attachment to luxuriancy of composition has been transmitted to our own times; there are several prescriptions of Huxham extant which contain more than four hundred ingredients." *Page 77.*

Rule of Simplicity:

"Let not the young practitioner, however, be so deceived; he should remember that unless he be well acquainted with the mutual

actions which bodies exert upon each other, and upon the living system, it may be laid down as an axiom that *in proportion as he complicates a medicine, he does but multiply the chance of its failure*. Superflua nunquam non nocent; let him cherish this maxim in his remembrance, and in forming compounds always discard from them every element which has not its mode of action clearly defined, and as thoroughly understood." *Page 110.*

How to Draw Forth Eloquence:

"It is said that whenever Dunning, the celebrated barrister, was called upon to make the finest displays of his eloquence, whether forensic or parliamentary, he constantly applied a blister to his chest, which he found to have the effect of imparting an unusual tone and vigor to his body, and elevation to his mind. *Page 120.*

THE USE OF NITROUS OXIDE AND OXYGEN ANALGESIA IN OPERATIONS ON THE EAR, NOSE AND THROAT

BY SECORD H. LARGE, M. D.

CLEVELAND

The dentists have been using this form of analgesia for a number of years in operations of the mouth, such as drilling around the sensitive areas of the teeth and in destroying the nerve; in fact, they are using it in almost all of their work.

In 1917 Dr. Will Walter published a paper advocating its use in eye, ear, nose and throat surgery. We have been using this anesthetic for over a year in our various operations, such as submucous resection, turbinotomy, exenteration of ethmoid cells, puncturing of the antrum, and in fact in all operations we could perform in the office.

Its use has certainly taken away much of the fear of the operation. Anything that tends to alleviate the pain and shock of operation is certainly welcome, especially during these times when most of our patients are in a highly nervous condition. I was going to say women, but I find, as a rule, that they stand operations better than men.

The psychological effect of analgesia upon the patient is certainly wonderful. No matter how strongly you may anesthetize

the parts locally, there still remains a certain fear, caused perhaps by the sight of blood or the crunching of the forceps. But when the patient is in the semi-conscious state, eyes being closed, he does not see the blood and should he hear the crunching sound it does not seem to bother him, since he is in that "Don't care" state.

In performing these operations in the analgesic stage, one should have at least three rooms, and to facilitate a description of



such requirements we will outline our own arrangements. The first room is used for preparation only, as no cutting instruments and no signs of the operation are visible. The second room is the operating room, and again no instruments are visible upon the entrance of the patient, as they are all covered with sterile towels. The third room is a recovery room and is located in the quietest part of the suite, and oftentimes the patient falls asleep and awakens with no unpleasant memories of the operation!

In all operations the field is made as sterile as possible by alkaline washes, drying by air, and the application of a two per cent solution of iodine in alcohol. Adrenalin 1-1,000 and cocain flakes are used and injection of novocain 1-200, adrenalin 1-1,000, one drop to dram. An interval of ten minutes should elapse before beginning the operation and it should be performed in the reclining position. The patient is carried into complete anesthesia by the nitrous

oxide and oxygen, using the face piece. This is done for the reason that once you get your patient under the influence of the gas, a very small quantity keeps him in a state of analgesia. When the patient is completely anesthetized the face piece is removed and the mouth piece inserted into the side of the mouth. Should the patient be very nervous, it is better to use the soft rubber catheter through one side of the nose, keeping the mouth closed by a rubber dam. When using the mouth piece we use pledgets of cotton in either side of the nose, well back, to minimize the amount of gas used and also to catch the blood and prevent its dropping into the naso-pharynx. In using the mouth piece very little oxygen is needed, as the patient naturally gets sufficient air.

We have our machine equipped with a three-way valve, so it does not necessitate the changing of attachments. The moment the face piece is removed the mouthpiece is inserted and then by



turning a valve the patient receives the desired amount of gas through this valve. The thumb-screw (4) revolves on a dial marked with M for mouth, N for nose and B for both. So at the beginning you set your machine with pointer to B and the patient is anesthetized, after which you place the mouth piece in the mouth and turn the pointer to M. Should you be operating in the mouth, it will be necessary to use the nasal mask, all machines coming

equipped with special nasal masks for administering anesthesia through the nose.

We use the large cylinders and the one containing nitrous oxide is equipped with an electric heater to keep the gas from freezing the valves. We also keep on the machine small reserve tanks, having it so arranged that there is no changing of cylinders when



the large cylinders become empty, but merely the turning of a stop-cock and opening the reserve cylinder.

We have never had a case of vomiting or any bad symptoms during or following this method of operating. Occasionally the patient may become a little stimulated and somewhat talkative, but by reducing the amount of gas this symptom immediately disappears.

The Cleveland Medical Journal

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Short notes upon clinical experiences or reports of interesting cases will be welcomed by the editors.

Original articles are accepted for publication by this Journal only with the distinct understanding that they are contributed solely to this Journal and will not be published elsewhere as original.

EDITORIAL

THE TEACHER TAUGHT

Advertising is old as the human race. The first transaction of which we read involves an advertising agent advocating his wares. In fact, the serpent offering Eve an apple in Eden had all the earmarks of a patent-medicine advertiser. He extolled the virtues of the fruit, said it would confer the knowledge of good and evil, and

assured Eve that if she ate it she "shall not surely die." Lydia Pinkham could make no more glowing promises, and tradition records that the promises were fulfilled about as poorly as are those of the noted Lydia.

The medical profession has always considered that there is still much of the serpent about the advertiser. We look askance at any effort to draw the public eye to any individual medical man for his personal profit. As our British brother would say, "It simply isn't done." In connection with medical products and institutions of various kinds, however, the pressure of modern tendencies has forced us to admit the legitimacy of advertising. But here our profession has raised a cry for absolute honesty of representation in all claims made in advertising. For years, journals like the *A. M. A.* and our own little monthly carried on an almost isolated fight against the barbarous old rule of advertising, "*Caveat emptor.*"

With these memories in mind, we have received something of a shock to our equanimity, as well as a pleasant proof that the afore-said serpent is changing into an angel of light. A special report of the Better Business Commission of the Cleveland Advertising Club has come to hand. This organization is the local branch of the Associated Advertising Clubs of the World. It is an inspiration to see that their motto is "Truth." Judging from this report, they are making most praiseworthy efforts to live up to that ideal. The report covers an investigation of the Co-operative Hospital Association Company, recently established in Cleveland. Certain claims made by this company seemed, in the view of the Commission, to be exaggerations. These claims were subjected to investigation, and the heads of the company were given a chance to appear before the Commission and explain the statements alleged to be exaggerations. Criticism was made of advertisements that appeared to imitate Red Cross and Liberty Loan posters; of the lack of a proper reserve fund; of inaccurate statements regarding trusteeship; of technical violation of the so-called "blue sky law," and of other mis-statements. Promises were obtained that these mistakes would be corrected. Whether or not they can be or will be set right, remains to be seen.

The Commission brings out the fact that the medical men giving their services to this hospital plan have, with the "other-worldliness" so common in members of our profession, remained in absolute innocence and ignorance of these business facts that have exposed the

institution to criticism. At the same time, it is not exactly flattering to our pride to have an institution of even a quasi-medical nature thus exposed as untruthful by our friend the enemy—the advertising man. When we recover from that momentary feeling of chagrin, however, we are filled with admiration for the fearless and honest report he has put out; and we come to the conclusion that he must be a very decent sort of fellow after all.

The Millennium is to see the lion lying with the lamb. That period must have arrived, for we see an even stranger sight: the medical man extending his hand in congratulation and honest admiration to his former foe, the “publicity expert.”

THE FORCE OF PUBLIC OPINION

“The disastrous experiences of the European nations, especially during the earlier months of the War, in their attempts to deal with prostitution and venereal diseases as wartime problems have been much discussed; since our own country has become involved in the war they have assumed especial importance—for while our policy has been definitely fixed by the official actions of the War and Navy Departments, the experiences of other nations, though based upon different principles, at least have the force of reality; they show what has actually happened under war conditions.”

The above statement is the introduction to a recently published article on venereal disease and expresses the actual reason for the present public insistence that every possible agency now bend its efforts toward the better control of venereal diseases.

The Army Y. M. C. A. is one of the non-governmental, non-official agencies most to be depended upon to help in the control of this disease. There is no organization that better deserves everything it is asking at this time. It reaches the men through various means that army regulations do not permit officers to use. With its *huts* located at each camp and back of the firing line, it takes the place of the home to every soldier as no other institution can do; in this way it provides facilities for comfort, entertainment and protection which the government cannot give.

Within the past few weeks we have listened to C. W. Whitehair, organizer of the Y. M. C. A. work in France, and to Mrs. James Cushnian of New York, president of the National Y. W.

C. A. Both of these representatives were in Cleveland for the purpose of outlining to the Cleveland people the need of the work undertaken and to be carried out by these associations in behalf of the safety and well-being of the United States soldiers, with the hope that resulting from this publicity large funds will be contributed to carry on the work so much needed.

The purpose of these speakers, as well, was to educate the general public and to this end the facts most calculated to impress the public mind were presented, facts that too often do not receive public consideration. From the large assemblage of statistics no doubt authentic, there were a few statements which were particularly outstanding and appalling and which if true constitute the most awful arraignment against the present control of venereal diseases abroad.

Mr. Whitehair in speaking before the Chamber of Commerce said that more than seventy-five percent of all the troops now in action are suffering from venereal diseases; that every regiment coming out of the trenches suffered more casualties from venereal disease than from actual warfare; that one Australian regiment had requested to be sent back to the front-line trenches since venereal disease, even though under temporary control, would prevent their return to their families.

We realize that the American troops do not come under this particular arraignment as they have only begun to be attached to the fighting units abroad, but we cannot assume that they will not fall into the same counting unless the most superhuman efforts are made to protect them, to educate them, to provide them with healthful diversions and amusements and to give the greatest possible publicity to any official negligence in prosecuting the control of this scourge.

It will rest with the government to prevent such shameful conditions to be attached to the camps in this country or to accompany our men to France as existed on the Mexican border where the soldiers of our Regular Army were allowed supervised prostitutes who lived with the Army. We are opposed to supervised prostitution in military life just as we are opposed to it in civil life; the problem is much simplified by the closing of all districts devoted to commercialized vice. There should be an absolute prohibition of street solicitation and a careful supervision of all women in the war zone. The prohibition of alcohol in the neighborhood of camps and

training stations is a piece of prophylaxis of the greatest value which we are promised the government will provide. It will then rest with the public, both men and women to so inform themselves of existing conditions and to so express themselves that these conditions will not be peacefully tolerated either by the people or the governmental authorities.

Mrs. James Cushman, President of the Y. W. C. A., says a very great danger exists for the young girls living in the small towns in the environments of camp sites, particularly if the civil and military authorities establish no restrictions, and parents and educators do not give such girls enough knowledge for their self-protection and their self-control.

Any lack of education of the boys and girls of this day upon the subjects of social hygiene and moral and sex ethics is a crime. We cannot lay too much stress upon education. There is no other problem of control and eradication of disease so dependent upon the education of the entire mass of population as is the world problem of the venereal diseases. Little progress can be expected so long as moral standards and health measures are in conflict. One cannot but feel that in regard to venereal diseases the public is hampered by ignorance of both their extent and seriousness.

From the purely medical standpoint we must look forward to the time when the reporting of venereal disease will be compulsory. From the standpoint of control this is quite as important as in any other communicable disease and is bound to come when public education has advanced sufficiently.

"It is discreditable and even dishonest that by contracting through self-indulgence a disease which he can avoid, a man should render himself incapable of doing that work for his country which he enlisted to do. Every man can by self-control restrain the indulgence of those imprudent and reckless impulses that so often lead men astray, and he who thus resists is a better soldier and a better man than the man of weaker will who allows his bodily appetites to rule him and who lacks the strength of character to resist temptation and to refuse any bad example he may see before him." This was the printed advice of Lord Kitchener, lifetime soldier, given to every soldier in the English Army, but in spite of this advice the English *Civil Communities* did nothing about the control of venereal disease until after this war began. Medical authorities advise that sexual continence is not harmful, that it conserves all the

powers to the human body, and it is the surest way of avoiding venereal disease. Since it is shown that such a practice is unnecessary, that continence is the one sure preventive and that far from being dangerous, adds to man's strength and value as a soldier, then may we not ask that all government and civil communities co-operate to the extent of removing temptation from the confines and surroundings of army life.

Secretary of War Baker says, "The soldier should remember that he owes his country the full strength of a well body and that it would be better for him to come back from this war wounded by an adversary blow, than to come back unscathed by our enemy but marked with the ineffaceable stain of this sort of disease." Public opinion will now support a sound program and sufficient authority has been secured through legislative and administrative action to promise important results.

Bascom Johnson, in October Social Hygiene says, "When Congress passed the act providing for the National Army, May 18, 1917, there was written into it in sections twelve and thirteen a brand new policy for the military forces of the United States. The national government by this act announced that alcohol and prostitution which had theretofore been regarded or largely tacitly recognized as necessary evils in connection with army life were no longer to be tolerated; that a government which drafted its young men to fight, and perhaps die for it, could not longer permit them to be surrounded by crude and vicious influences from which many would return home maimed in body and soul. These provisions of the act were received with astonishment and incredulity by many communities which were familiar with army life. This act was promptly followed up by Secretary of War Baker's letter to the governors of all States. This letter called for the co-operation of the communities within each State where camps were located in carrying out the purpose of Congress. It was stated, however, that as a last resort, the camps would be moved from the communities where clean conditions could not be obtained. A similar position was taken by the Secretary of the Navy Daniels.

"Although this matter was given considerable publicity, there were large sections of the public who could not understand that a serious attempt would be made to enforce this law. It fell to the lot of the Commission on Training Camp Activities, appointed by Secretary Baker soon after the war started, to complete the con-

version of these communities. This conversion is still going on and will perhaps need to go on more or less continuously during the war."

Many national agencies will co-operate in this fight on venereal disease. Activities and co-operating agencies planned to reduce the prevalence of venereal diseases begin with the War Department and include in addition the Medical Department of the Army and Navy, the United States Public Health Service, the Commission on Training Camp Activities, Civil Authorities, and non-official agencies, by which we mean local and national volunteer agencies that may be utilized to discover failures and abuses, and to help otherwise in the work under direction of the proper authorities.

Inspection of social and moral conditions in the camps, in the zones, and in contiguous districts, and of the work being done by the various agencies for social betterment should be made by federal authorities. Similar volunteer inspections by dependable vigilance and other civic associations should be encouraged. All possible influences should be brought to bear to encourage civil authorities in the attack upon prostitution in all its phases. A medical program for civil communities equivalent to the military program for prevention and treatment should be encouraged.

American troops in France will probably meet conditions very similar to those surrounding the Canadian troops. The men on furlough will not be able to return to their homes as have the French and English men. But the United States has the great advantage and opportunity not accorded to other nations of preparing to meet this situation in advance of mobilization. It is just here that we may expect so much from the Y. M. C. A. activities. All power and success to the work of this association. It has received the splendid financial support of the whole United States and in addition it is not too much to expect that it will receive through the United States Government the assurance from our Allies of better camp surroundings and increased administrative measures for the control of venereal diseases before the flower of American manhood is transported to France.

UNPAID MEDICAL SERVICE

Mr. Henry K. Jessup of New York of the New York Bar is quoted extensively in the Outlook of October 10th. In speaking of the service rendered by medical men to the government in her present crisis, he writes as follows:

A, B, and C, one at least of whom is a doctor, receive notice from the Adjutant-General of the State on behalf of the Governor that the President has appointed them to serve on the local board for such and such a division in a given locality. The appointment is practically compulsory. Upon filing an oath of office and organizing a staff the board issues a notice to a specific number of the drafted men under its jurisdiction to appear and be examined. Volunteer physicians and specialists in eye, nose and throat are secured. *Too much cannot be said by way of appreciation of the generous response of the medical fraternity to this appeal for unpaid service.* Many hours, day after day, they examine specimens of humanity—weigh, measure, listen to hearts, take histories, test sight and hearing, often of unwashed and highly miscellaneous persons. They certify the fitness or unfitness of each man. If the latter, it must be upon a second examination by an independent physician. If the man is certified as unfit, his relation to the selective draft is at an end, unless the case be reopened for fraud or mistake.

ABSTRACTS

ABSTRACTS IN MEDICINE

The Salicylates. VIII, Salicyl Edema. P. J. Hanzlik, R. W. Scott and J. L. Reycraft, *Arch. Int. Med.*, 1917: XX: 327.

In the course of some earlier observations on the pharmacological action of the salicylates the authors observed that following the administration of full therapeutic doses of salicylate to human individuals there occurred a rather marked diminution in urine output. This depression was greatest about ten to twenty hours after the symptoms of toxicity appeared and persisted for about forty to seventy hours after the administration of the drug. The present paper of this series deals with the observation made on patients in an attempt to decide whether the urinary depression was due to sweating or to a retention of body fluids, edema.

At the beginning of an experiment the patient was given a weighed quantity of food each meal. This together with the water intake was maintained constant throughout the period of observation. After three or four days of this routine the weight curve became constant—salicylate was now administered (about 20 grains every hour) to the point of toxicity. An accurate record of the individual's weight was kept, the body weight being taken every two hours throughout the experiment.

In all nine individuals were studied. As a result of their observations the writers conclude that the edema produced by the administration of full therapeutic doses of salicylate is due to the retention of water as indicated by an increase in body weight. The amount of this increase in body weight varies somewhat in different individuals depending on the amount of diaphoresis. The retention is demonstrable about twenty hours after the start of administration of the salicylate and persists until the salicylate excretion is completed. Daily estimations of the hemoglobin content of the blood indicate that the retention occurs chiefly in the tissues. The edema is accompanied by a diminution in phenosulphonephthalein excretion together with an accumulation of urea nitrogen of the blood, and increased excretion of albumin, all of these elements reaching their previous levels with the disappearance of the edema. Such observations indicate an impairment in the functional efficiency of the kidneys which no doubt plays an important part in the production of the edema.

R. W. S.

Clinical Studies on the Respiration, III. A Mechanical Factor in the Production of Dyspnea in Patients with Cardiac Disease. Francis W. Peabody, *Arch. Int. Med.*, 1917: XX: 433.

The author studied the effect on the respiration of having cardiac patients breathe gradually increasing percentages of carbon-dioxide, and compared the results with those obtained from normal individuals under the same experimental conditions. The subject was made to breathe through a valve separating the inspired from the expired air. The expired air passed through a closed circuit and was then rebreathed, so that the inspired air contained a gradually increasing percentage of carbon-dioxide.

When normal individuals breathed an increasing percentage of CO₂ the minute volume of air breathed was increased by an elevation in rate of respiration as well as a marked increase in the tidal air. At the beginning of an experiment when the subject was breathing room air (.04% CO₂) the average respiratory rate was 16 and the tidal air was 624 c.c.

At the end of the experiment when the CO₂ in the inspired air had risen to 7-9% the respiratory rate was almost doubled and the tidal air was approximately quadrupled. In other words the normal subject was breathing about eight times as much air at the end of the experiment as he was when breathing room air.

The same experiment on cardiac patients revealed the fact that they became dyspneic when they were breathing a much lower percentage of CO_2 than was the case with the normal persons. When the cardiac patients were forced to discontinue the experiment on account of dyspnea, they had increased the rate of respiration much as did the normal subjects, but the depth of respiration was increased to a much less degree.

Such observations seem to indicate that cardiac patients are unable to adequately increase pulmonary ventilation in response to a rising stimulus to respiration. According to Peabody the limitation of the depth of breathing is an important factor in the production of dyspnea in patients with heart disease.

R. W. S.

Clinical Studies on the Respiration, IV. The Vital Capacity of the Lungs and Its Relation to Dyspnea. Francis W. Peabody and John A. Wentworth, *Arch. Int. Med.*, 1917: XX: 443.

This paper deals with observations on the vital capacity in a large series of normal individuals, of patients with heart disease and of patients with various other clinical conditions. In an earlier paper in this series it was noted that the dyspnea produced in cardiac patients by CO_2 was partly due to their inability to compensate by increasing pulmonary ventilations as was the case in normal individuals. Such observations would indicate that cardiac patients have an abnormally low vital capacity. It is recalled that "*vital capacity*" is the greatest volume of air that can be expired after the deepest possible inspiration.

After making a large number of determinations of the vital capacity of the lungs of healthy persons the authors found it possible to establish average normal standards for groups of individuals of different sex and height. Using the normal standard they found that cardiac patients had a decreased vital capacity which bore a close relation to the tendency to dyspnea.

They found that compensated best cases who did not have dyspnea had a normal vital capacity, whereas those in patients who complained of dyspnea, the vital capacity was low. When the patient improved his vital capacity tended to rise.

In certain other clinical conditions affording an impediment to the mechanics of respiration, it was found that the tendency to dyspnea corresponded closely to the decrease in vital capacity.

R. W. S.

ABSTRACTS IN SURGERY

Memorandum on Tetanus, Authority of British War Office by the War Office Committee for the Study of Tetanus. Third edition. This is paramount to an Army Order for the treatment of tetanus. Medical officers have no option.

1. Prophylaxis. The prophylactic value of injections of antitetanic serum is beyond all doubt, but the immunity conferred by such injection is lost in ten days. The appearance of the wound is no aid in the determination as to whether tetanus bacilli are present. All wounded men shall receive four injections at least, with intervals of seven days between injections. Cases of trench feet are to be treated with the serum, as wounded men.

2. Dosage in prophylaxis. Each injection should be 500 U. S. A. units. The first is administered at the Dressing Station of the Field Ambulance.

3. Precautions before operating. When operations are performed at the site of wounds, even if they are healed, a prophylactic injection of serum should invariably be given if the operation be performed at a greater interval than seven days from the last injection. This precaution is very necessary, as numerous cases have occurred in which the performance of a

simple operation has been followed by an attack of tetanus, although in many cases the primary wound has been healed several weeks before the operation. As it requires forty-eight hours for absorption from subcutaneous injection or twelve hours from an intramuscular, the injection should precede the operation accordingly.

4. Oxidizing antiseptics, as hydrogen peroxide, potassium permanganate, chlorine water and Dakin's solution, may be of use.

5. Diagnosis. The early diagnosis of tetanus is of the greatest importance, as the chances of successful treatment diminish rapidly as the length of time increases after the first symptoms have been observed. A delay of an hour in treatment may make the difference between success and failure. In those who have had a prophylactic injection, trismus and general symptoms may not occur at all or possibly not until months have elapsed—delayed tetanus. In such cases the manifestations of tetanus may be confined to local spastic rigidity of the wounded limb, which may persist for weeks or months and then disappear or become general. Early signs are spasticity and increased reflex excitability of muscles around the wound; a complaint of jerking, jumping, or stiffness in the affected limb; trismus; facial spasms; paralysis or spasms of eye muscles, of pharyngeal muscles, complained of as a sore throat, of tongue muscles, of neck, complained of as a stiff neck, of thoracic and abdominal muscles, complained of as a stitch in the side or as difficulty in micturition. There may be early an increase of deep reflexes. Once diagnosed the patient should be examined as little as possible.

6. Therapeutics. Commence active treatment as soon as early signs are seen. Of the four methods of administering tetanus antitoxin—subcutaneous, intramuscular, intravenous and intrathecal—the last named is the best. This should be repeated for two, three or four days in succession and combined, if thought desirable, with intramuscular injections. The spinal fluid becomes cloudy because of leucocytosis. Transient symptoms of meningeal irritation may arise and should not cause alarm.

7. Dosage. The more acute the case, the larger should be the doses. 50,000 to 100,000 units may be given during the first few days. Thus:

	Subcutaneous	Intramuscular	Intrathecal
1st day .....	.....	8,000	16,000
2nd day .....	.....	8,000	16,000
3rd day .....	.....	4,000	8,000
4th day .....	.....	4,000	8,000
5th day	2,000	.....	.....
7th day	2,000	.....	.....
9th day	2,000	.....	.....

It is undesirable to run in more serum than will replace the cerebrospinal fluid drawn off. Symptomatic treatment consists of morphine gr. $\frac{1}{4}$ every four hours, or chloral, potassium bromide, chlorotone, or paraldehyde. Other drugs are discarded. After the appearance of tetanus it appears to be safer to abstain from surgical interference with the wound unless for imperative reasons.

A. STRAUS,
From France.

The Treatment of Gunshot Wounds of the Knee Joint. C. Max Page,
Brit. M. J., 1917: II: 282.

Wounds caused by a rifle bullet travelling at high velocity are not operated; the joint is fixed in a splint. Wounds caused by shell fragments, and other irregular missiles are subjected to early operation, after an X-ray examination in two planes. In cases of simple synovial injury, the wound tract is completely excised and any foreign body removed. The skin edges

are closed if possible without undue tension. If articular bone injury is present, the procedure is essentially the same, including removal of injured bone. When the comminution is gross and subsequent ankylosis is assured, primary excision may be most effective, but within forty-eight hours. When the bone is fissured, any completely detached fragment is removed and bruised cancellous bone in the wound tract is curetted away until a bleeding surface is exposed. In "punch" wounds the wound tract is curetted and the foreign body dislodged from its end. These tracts are packed with gauze (dry), which is left four or five days. Fixation is best secured by means of a plaster cast interrupted at the knee, with the limb suspended.

In some of these cases the joint becomes hot and swollen, but without severe constitutional symptoms. The sutures are removed and hot fomentations applied. Frequently the condition will subside. Often, however, severe general infection of the joint occurs, which is treated by arthrotomy by means of two vertical parallel lateral incisions into the subcrural pouch. Posterior drainage is not attempted. Gauze is packed in down to the joint. Any secondary periarticular abscess is allowed to develop definitely and then incised. Amputation may be necessary with severe toxæmic symptoms.

Results: The two cases of rifle bullet perforation recovered. Of eleven cases of shell wound with synovial injury only, all but one recovered without general infection of the joint. Where bone was injured, of those with gross comminution, 17 in number, 4 recovered without infection, 7 recovered after general infection, 3 recovered after amputation, and 3 died; of those with fissuring of bone, 14 in number, the analogous figures are 10, 1, 1 and 2; of "punch" wounds of bone, 28 in number, the figures are 22, 4, 2 and 0. The notable feature is the unsatisfactory course of the cases with comminution.

Neither cross section and flexion of the joint, nor secondary excision of the knee, are sound procedures where general infection of the joint has occurred.

C. H. L.

On the Treatment of Certain Selected Cases of Septic Arthritis of the Knee. W. Rankin, *Brit. M. J.*, 1917: II: 287.

Suitable patients for the method proposed must be young, lightly built men, not fat nor flabby, with a past history of good health, with a spirit of courage and an interest in preserving the leg. The local damage must be within certain limits. If the infection is exceedingly virulent, amputation is necessary to save life. If the bony damage is great, if the head of the tibia especially be shattered, then probably amputation is the best treatment; likewise where there is doubt as to the condition of the nerves and in the presence of other serious gunshot wounds. That the joint is lost is determined from the temperature, pulse rate, nature of the discharge, tenderness, edema. Periarticular abscess formation need not be present to reach a decision, and delay may mean death from septicaemia and pyaemia.

Given a case such as is indicated above, one does not depend on drainage. The septic knee joint cannot be drained, as is obvious on consideration of the numerous pouches and spaces. The joint must be laid wide open by means of an omega-shaped incision carried through the quadriceps tendon, down each side of the patella, and then transversely again at the joint line. The semilunar cartilages are removed and the crucial and lateral ligaments divided so as to allow the tibia to be dislocated from the femur. The pocket behind the external tuberosity of the tibia will lead to calf infection, and the subcrureus pouch to thigh infections, which must be opened. The synovia is excised from the pouches, the patella is turned down over the tibia and the limb is dressed at an angle of about 45 degrees, with the aid of a special splint. One has now to deal with surface sepsis and not an abscess cavity. The Carrel method and Morison's B. I. P. paste are recommended. After the formation of healthy granulations and a normal temper-

ature for two or three weeks the ends of the bone are excised and the limb splinted in a straight position, with just a shade of hypertension. Care must be taken to remove enough bone to prevent stretching of the popliteal space with resultant interference of the circulation of the blood to the leg and foot.

Of 27 cases, 13 were sent to England with good union, 3 are almost ready to proceed, 8 died, 3 were in the end amputated. The average stay in hospital was about four months. C. H. L.

On Gunshot Injuries of the Chest. J. R. Bradford, *Brit M. J.*, 1917: II: 141.

Haemothorax is the most common result of a chest wound; pneumo-haemothorax occurred in only 8 cases out of 328, and pneumo-thorax in 4. Infection of haemothorax may, of course, occur early, but of special interest is late infection, in the second or third week, coming on suddenly, with urgent symptoms, such as increasing fever, dyspnoea, pain, rapid pulse and jaundice. The explanation of these late cases probably lies in the sealing off of the infecting agent, such as a fragment of clothing, by blood clot. Later the infection rapidly invades the whole fluid. Of 450 cases, 25% were infected; 50% of these showed anaerobic bacilli (hence not of pulmonary origin). Septic infection is the most frequent cause of death in cases surviving the first few days. Secondary hemorrhage is extremely rare.

At autopsy the degree of collapse of the lung, especially the lower lobe, is very marked, more so than usually seen in pleural effusions. Likewise, the overdistension and so-called emphysema of the upper portion of the lung is excessive. The pleura is covered with fibrin $\frac{1}{8}$ to $\frac{1}{4}$ inch thick. The collapsed lung rarely if ever shows signs of inflammation. The bloody fluid is essentially defibrinated blood (serum plus corpuscles) plus some pleural exudate, which in the infected cases may be increased so as to be recognized as pus. True clotting does not occur after removal. A false clotting, scanty and gelatinous, may occur if there be considerable pleural exudation. In a considerable number of the infected cases there is gas formation (anaerobic gas-producing organisms), often very rapidly increasing. The gas may be free in the pleural cavity, or localized between the blood below and the emphysematous lung above. It may be under considerable tension.

The source of the hemorrhage is probably in the majority of cases from the lung wound. Where the bullet has traversed the liver, bile may be found in the pleural cavity, and may reaccumulate after paracentesis. Jaundice does not necessarily develop in such cases; being further evidence of lack of absorptive power on the part of the pleura.

Dyspnoea, although often at first urgent, diminishes rapidly even when the amount of fluid is large. It is, however, easily and greatly increased by exertion (travelling). The continued presence of high fever, pain, distress, rapid pulse and furred tongue should suggest infection, the only certain proof of which is by bacteriological methods. Jaundice, if marked, is characteristic of infection, especially in anaerobic cases, where a deep yellow jaundice involving the skin generally develops, often with great rapidity. Such a jaundice is not to be misinterpreted as indicating a wound of the liver.

One outstanding physical sign, confirmable by X-ray, is the high position of the diaphragm on the side of the hemorrhage. It is also often immobile. The skodaic resonance above the fluid is more marked and extensive than in ordinary pleural effusions. Over the fluid tubular breathing, oegophony, and even pectoriloquy, are often definite; in short, the signs of pneumonic consolidation, a condition which rarely occurs. In some cases the ordinary signs of pleural effusion are present or may follow the consolidation signs, especially with advancing infectious exudation. Gas collections may give the cracked-pot percussion note.

In a considerable number of haemothorax cases, in contradistinction to the enlarged chest of ordinary pleural effusion, there is found a chest flattened and retracted on the side of the hemorrhage, with practically no movement. This does not occur with the large collections of fluid. This retraction and immobility and the high level of the diaphragm would seem to be due to extensive collapse of the lung, out of all proportion to the amount of fluid present in the pleura. Cases of massive collapse are recorded where the amount of effusion was so small as not to need aspirating. Again, the collapse may occur on the opposite side of the chest to that injured, a condition which is generally erroneously attributed to contralateral pneumonia, a mistake which is avoided by ascertaining if the apex of the heart moves toward the supposedly collapsed side. Contralateral collapse has been observed in wounds of the chest wall, with no lesion of the chest wall. Although the mechanism is obscure, collapse of the lung is the leading phenomenon of gunshot injuries of the chest and explains the main physical signs.

The treatment of sterile haemothorax, if the effusion reach above the angle of the scapula, consists in aspiration at the end of a week. This should be associated with replacement of the blood by oxygen, since in this way all the blood may be removed at one sitting without distressing attacks of cough, etc. Free drainage is indicated in all infected cases, with resection of the rib. This should be done early, as the plastic exudate on the lung pleura rapidly increases and retards or prevents expansion of the lung.

C. H. L.

ABSTRACTS IN PEDIATRICS AND CONTAGIOUS DISEASES

The Place of Infant Welfare in Public Health. J. H. Knox, *J. A. M. A.*, 1917: LXIX.

The importance of the work is emphasized by the fact that 18 per cent of the total mortality of all ages occurs under one year and that the mortality can be reduced by known methods from one death within the year to every five babies born (present rate in many parts of the country) to one in every twenty. Also a healthy first year gives a much longer life expectancy to the individual than an effected cure from an illness in adult life. Every public health improvement in a community benefits the baby, *i. e.*, (a) vital statistics, especially that dealing with birth registration, which later is most vital for intelligent infant welfare work; (b) general sanitation, housing, milk supply, water supply, industrial occupations and venereal disease. The study of infant welfare falls into two main divisions; first, that of having better babies born, involving the question of marriage of the totally unfit, the unsexing or segregation of this class, acute and chronic alcoholism, use of habit-forming drugs, the effect of tuberculosis on the vigor of the offspring, also the effect of factory work or hard manual labor on the part of the pregnant woman, also the question of syphilis as regards still-births, premature births and lowered infant vitality. The second main division is the study of the causes of illness and death in the first year: (a) Congenital debility and prematurity (one-third of all infant deaths in the first year occur in the first month of life). (b) Digestive diseases. (c) Diseases of the respiratory tract. (d) Acute infections. Another most important phase is the high mortality of the institutional babies, the remedy being the private home boarding scheme, one baby per home. The reduction of illegitimacy and the mortality of these babies can only be brought about by keeping the mother and baby together in the first few months. Lastly, the important question of wage must be settled. A recent governmental investigation in a limited district showed infant mortality in families earning less than \$10.00 a week was more than 200 per thousand, while the weekly wage of \$25.00 and over cut this down to 80 per thousand.

C. W. W.

Food Requirements in Infancy. Editorial, *J. A. M. A.*, 1917: LXIX.

The new-born infant at rest requires 48 calories per kilogram of body weight per day. Between two months and one year it shows heat production of 60 calories per kilogram per day during sleep. This is called basal metabolism. When the infant is awake, a large amount of additional heat production results from the crying, kicking, and constant general movements of the healthy baby. This latter has been worked out to a degree by Talbot. In a normal, quiet infant awake, sufficient muscular activity results so that 15% should be added to the basal metabolism; if normally active 25% should be added; if extremely active 40% should be added. Growth requires the addition of 20% to the above result, and excreta 15%. Rubner and Heubner really set the standards for estimating the infant's food requirements, *i. e.*, during the first three months the requirement is 100 calories per kilogram per twenty-four hours, the second three months 90 calories, and the last six months of the first year 80 calories. Talbot suggests that cow's milk-fed infants require more than breast-fed, as the protein content is so much greater in cow's milk. The stimulating action of the protein causes a large amount of extra heat to be used during digestion. The sick infant presents a different problem, as the basal metabolism is considerably increased and assimilation decreased to subnormal. Temperature also causes a difference, as the vital processes are all depressed, especially assimilation.

C. W. W.

Two Cases of Congenital Persistent Acroasphyxia in Infants. Noxon Toomey, M. D., *Am. Jour. Med. Scien.*, CLIV: 547, 500.

Acroasphyxia or acrocyanosis is a local vasomotor disturbance usually symmetrical and confined to the extremities. It resembles and may be a form of Raynaud's disease. Two cases are reported. The first case occurred in a child of nine months, colored. The condition was first noticed at the age of two weeks and was first thought to be nothing more than an increased liability to cold hands and feet. For two or three months the appearance of the extremities could be made normal by the local application of heat, but since the cyanosis was not amenable to warmth. The earliest lesion may not have been an ischemia, as the toes and soles of the feet were white; later cyanosis developed, and for the past eight months had been deepening, but the coldness of the areas, which was always marked, had not been increased. The second case was six months of age when seen. The cyanosis of the hands and feet was noticed on the second day after birth. There was no initial ischemia, but always a congestion and cyanosis that has not increased in extent or intensity. The asphyxia was always of the same intensity in all four extremities. There were remissions of the asphyxia and once or twice it nearly disappeared without the use of local heat. No cause could be found for these remissions, but a diarrhea would cause a slight fading of the lesion.

H. C. K.

ABSTRACTS IN GYNECOLOGY AND OBSTETRICS**A Study of Fetal Maturity in Utero.** Chas. B. Reed, *Surg., Gyn. & Obst.*, 1917: XXV: 201.

The author speaks of the great advantage in accurately estimating the size of the child in utero, and although giving pelvic measurement its well-deserved value, he deplores the lack of study and application of means to estimate the size of the unborn child.

The length of the child is far more valuable in estimating its intra-uterine life than is its weight, weight being evidence of present nutrition, while length indicates past assimilation. Von Winckle's statement is confirmed, that 72 per cent of babies over eight and a half pounds are past mature and show excess in length to confirm the opinion.

Maturity is defined as the degree of fetal development enabling the child to easily surmount the perils of extra-uterine life. Maturity is objectively estimated by the length of the child in utero and should verge on 50 cm.; by the duration of pregnancy, determined by careful measurements of the uterus, rather than estimating from date of last menstrual period, or time of quickening; and by the size of the fetal head, which should measure 8.5-10 cm. in its biparietal diameter and 10-12 cm. in its occipito-frontal diameter.

The length of the child in utero is determined by Ahlfield's method. The distance between the upper fetal pole and superior margin of the symphysis is taken, from this 2 cm. are subtracted to allow for the thickness of abdominal and uterine walls, the result is multiplied by 2 and the resulting figure is the approximate length of the child.

The author's antepartum estimate tallied exactly with the postpartum findings in 37 per cent and varied less than 0.5 cm. in 24 per cent of the cases. In only 24 per cent did the postpartum findings exceed the antepartum estimate.

McDonald's measurement was also used to estimate maturity. With a tape, the distance from the upper border of the symphysis to the top of the fundus is measured. The tape is not carried to the apex of the fundus, but to the same height above the symphysis, it not being carried by an inch or so to the bottom of the depression made by the fingers locating the top of the fundus. In multipara the fundus is brought to the mid line by lateral pressure.

The height of the fundus at term is by McDonald given as 35 cm. After the fifth month the fundus rises at the rate of 3.5 cm. a month. Therefore, the measurement divided by 3.5 will give the month and fraction thereof of pregnancy.

In estimating the size of the fetal head the method of Perret is employed. The occipito-frontal diameter of the head is measured as it lies above the inlet or in the fundus. Perret subtracted 2 cm. from this to allow for the thickness of the uterine and abdominal walls, but Stone found that the results were more accurate if this were not done. Jerret subtracted the constant 2.5 cm. from the obtained occipito-frontal diameter to get the biparietal diameter. The author has found that the subtracted length should vary as follows: for occipito-frontal diameters of 10 cm., 1.5 cm. should be subtracted; from occipito-frontals 11.0-11.25 cm., deduct 2.0 cm.; of 11.5 cm., 2.5 cm.; of 12 cm., 2.5 cm., and the result will be the biparietal diameter.

The author's results, using the above scale, give 67.7 per cent biparietals correct within 0.25 cm., 25.8 per cent correct within 0.5 cm.

The author urges that greater attention be given this subject, for his results have been very helpful and can no doubt be improved upon.

W. D. F.

Quantity of Blood Lost in Menstruation. A. Lahille, *Annales de Gyn. et o' Obst.*, Paris, 1917: LXXII: 535.

The menstrual discharge was most carefully collected in seven cases. Cotton compresses were used; they were washed, the fluid evaporated and the amount of iron in the residue determined. This was then compared with the iron content of the woman's blood.

Hippocrates and Galen placed the amount of blood lost at this time between 500 and 600 gm., whereas recent physiologies place it at 120 to 240 gm.

Lahille's researches showed that 25 per cent of women do not lose over 20 gm. of blood in all; 50 per cent lose 50 to 55 gm., and 25 per cent more than 65 gm. He concludes that the loss of more than 80 gm. suggests abnormal conditions. The dry residue of 100 gm. of menstrual discharge equals 21 to 22 gm.

W. D. F.

Results Following the Treatment of Pelvic Inflammatory Lesions by Surgical Measures. John G. Clark, M. D., and Charles C. Norris, M. D., *Surg., Gyn. & Obst.*, 1917: XXV: 33.

Simpson's observations and conclusions have convinced the authors of the advisability of treating pelvic infections conservatively. They have confirmed the findings, that in this class of cases absolute rest, Fowler position, regulation of diet and bowels, diuretics, the use of hot douches and hot or cold compresses to the lower abdomen, are followed in the majority of cases by a drop in the temperature, lowering of the pulse rate, the peritoneal symptoms subside and the pain disappears. The enlarged tubes decrease in size or the lateral masses disappear.

These cases, particularly in young women with gonorrhoeal infections, are now allowed to return home and instructed to return immediately on reappearance of symptoms. Many cases have no further trouble. With recurrence, the same treatment is carried out, though not to the absolute disappearance of all symptoms, as it has been found that if this is done the patients so frequently refuse operative procedures which are most advisable, the result being that they are usually subject to frequent exacerbations and progressive destruction of pelvic tissues.

In some cases the waiting policy does not bring improvement. The infection does not subside and the pelvic mass grows larger. In such cases the accumulation of pus is evacuated, preferably through the vagina by pelvic puncture. Occasionally the abdomen is opened in order to facilitate puncture from below by making sure vital structures are not damaged, but only very occasionally is it found necessary to drain through the abdomen. In some 65 per cent of cases treated in this way no further care is required, though if symptoms persist after drainage has ceased, operative removal from above of damaged structures is necessary.

The authors' analysis of their cases give some valuable and interesting results. Irrespective of the type of operation in 308 cases of inflammatory disease of the pelvic organs, of 137 purulent cases 64 per cent were cured and three died; whereas of 171 non-purulent cases 74 per cent were cured and no fatalities occurred. This shows much in favor of operating non-suppurating cases. Wound healing was also much more satisfactory. Not a single case died during the course of conservative treatment.

Considering conservatism as practiced, it was found that a larger percentage of women who were not operated continued to have pelvic symptoms, than those who were subjected to radical operation and ovaries and uterus removed.

The radical cases treated by hysterectomy were divided. Of 100 cases operated before 1910, who were subjected to operation a day or two after admission, the mortality was 6 per cent. In 115 cases done since 1910, almost all being kept under observation until the temperature had declined to nearly normal and the acute symptoms had subsided, the mortality was nil.

The nearer the menopause, the more radical should be the operation. Unfortunately, so many cases are in young women during the child-bearing period. In 29 cases where uterus, one tube and one ovary were left, three pregnancies occurred, one ending in abortion. Among 8 unilateral salpingotomies, 7 complained of subsequent pain, whereas among 51 bilateral salpingectomies, 41 were cured and 9 improved. Experience has shown that after pelvic inflammatory disease sterility is the rule.

The removal of all ovarian tissue in young women has unquestionably been followed by more pronounced nervous reaction than when some such tissue was saved. It is advisable, therefore, to always save at least some ovarian tissue.

Sexual disturbances and neuroses are less apt to occur in women after 28 to 30 years of age than in younger unmarried females, victims of

gonorrhoeal infections. Where sexual apathy occurs in women previously normal in this respect, return to normal is the rule, even after complete removal of ovaries and uterus. In a woman with only a limited desire, double oöphorectomy almost always abrogates all sexual desire. When ardent desire has been suppressed, due to the pain incident to the infection, return to her former condition is usual even after removal of both ovaries and uterus. In women 18 to 25 years of age a decided atrophy and diminution in caliber of vagina occurs after such operations. W. D. F.

ABSTRACTS IN DERMATOLOGY

Critical Review—the Treatment of Syphilis. L. W. Harrison, *Quart. J. Med.*, 1917: X: 291-356.

As the title indicates, this is an excellent article on the subject of syphilis in regard to its treatment since the discovery of the treponema-pallidum and of salvarsan. The author also gives his methods and results as used with the soldiers at Rochester Row, London. The subject of reaction to salvarsan, including fatalities, results from salvarsan, etc., are all very thoroughly reviewed. Likewise, the author discusses—though not in such detail—the different forms of mercury used in the treatment of syphilis, mentioned also some French preparations, such as galyol, luargol and disodo-luargol.

To anyone desiring a general review of this subject, this article is to be heartily recommended. H. N. C.

A Note on Purpura in Meningococcal Infections. T. R. Elliot and H. W. Kaye, *Quart. J. Med.*, 1917: X: 361.

Brown noted a petechial rash in 30 per cent of the 27 cases of meningococcus infection that he had seen. McNee reports that a rash could be observed in at least 20 per cent of those he had seen at the beginning of the third day of illness. Flock, in a resumé of 61 cases from the London District, gives the rash as a feature in 13 per cent of them. Brown finds the common form to be a petechial rash resembling flea bites and noted one case with large purpuric spots on the trunk and thighs.

The authors state that several medical officers have met with fulminating and rapidly fatal cases of meningococcus septicaemia associated with a purpuric rash. They report one such case with death in twenty-four hours. The second case had trench feet associated with a necrotic purpura from cerebro-spinal meningitis. Eventually the feet had to be amputated, but the patient recovered. This patient had a very extensive purpura of the legs and thighs, but nothing was found in the blood culture. His spinal fluid was cloudy and contained meningococci. H. N. C.

The Fight Against Venereal Disease. I. Gougerot, *Paris Med.*, Sept. 22, 1917: 241.

The present war calls for extraordinary efforts on the part of the nation to overcome the dangers from venereal diseases. The struggle must be carried on simultaneously by all possible means. The author recommends five different methods at hand.

First, the formation of dispensaries in all departments, large and small—the service to be in charge of a specialist in dermatology, syphilis, and urology, along with an assistant, a dentist, and perhaps a laboratory man. Provision should be made for evening, noon and Sunday consultations and treatments. By means of the automobile this service could be extended even to small towns.

Second, there must be a closer regulation of prostitution, with compulsory supervision and treatment in all diseased cases.

Third, the public must have a better education along these lines by means of an anti-venereal propaganda.

Fourth, for the protection of the public there should be a more general prophylaxis required in restaurants, barber-shops and saloons. Charlatans must be suppressed.

Fifth, a campaign of moral education enforcing the idea of family life, of respect for the young girl, and of early marriage. H. N. C.

ABSTRACTS OF OPHTHALMOLOGY

Acute Pneumococcus Conjunctivitis with Complications and Fatal Termination from Meningitis. Robert B. Brownfield, M. D., *The Ophthalmic Record*, 1917: XXVI: 516.

The conjunctivae of both eyes of a twelve-year-old boy were infected with the pneumococcus, and the local ocular reaction was so great that it was impossible to inspect the corneae because of the swelling of the eyelids. In six days there was an elevation of temperature, ranging from 101° to 103.6°. During the three following days the local eye reaction subsided until it was possible to expose the corneae, and there was less elevation of temperature. Acute pharyngitis occurred five days later, and the temperature reached 104.3°. There was improvement in the pharyngeal symptoms for several days, during which time the eye symptoms continued to improve, when, on the sixth day following the onset of the pharyngitis, opisthotonos together with other signs of meningitis made its appearance. By means of lumbar puncture there was secured 20 c.c. of slightly cloudy cerebro-spinal fluid under slightly elevated pressure. Of the 650 cells per cmm. of cerebro-spinal fluid, 70 per cent were polynuclear and 30 per cent mononuclear. No micro-organisms were found in the fluid. Death followed three days after the onset of the meningitis. R. B. M.

The Habitual Use of Spectacles an Insurance Against Traumatism Rather Than a Risk. H. Gifford, M. D., *The Ophthalmic Record*, 1917: XXVI: 519.

That there is a certain risk of injury to the eyes from broken lenses is not denied, yet such risk cannot be compared with the protection from injury which glasses afford. During thirty-three years of practice the author saw but five cases of injury to an eye by broken lenses, while during this period he saw 2,300 cases of severe eye injury, 90 per cent of which it is estimated would have been prevented had glasses been habitually worn. The greater proportion of these accidents were from household and agricultural injuries, and did not occur in those employments in which the workers are urged to wear protective glasses. The consideration of these facts has led the author to urge the wearing of glasses by persons having but one eye, and by those having either partially or wholly lost the light of an eye. In such cases it is recommended that there be worn spectacles with strong rims and large lenses. The protection which such spectacles afford is so much greater than the risk attendant upon their use that every person with but one good eye should habitually wear them. R. B. M.

ABSTRACTS IN LARYNGOLOGY, RHINOLOGY AND OTOTOLOGY

Aviation and Otology. Guggenheim, *Interstate Med. J.*, Sept., 1917: 865.

The relation of neuro-otology to aviation is one of the interesting developments of the present war. The otologist can render a great service to

the individual, as well as to the nation, by excluding from the aviation corps those who are "vestibularly defective."

Balance depends upon (1) the vestibular apparatus, (2) the visual apparatus and (3) the muscle sense. We accommodate ourselves fairly easily to the loss of one of those three (3) sources of information, but trouble results at once when deprived of "two legs of the tripod." Inasmuch as the aviator is practically deprived of his muscle sense and may easily, as in going through a cloud, be deprived of his visual sense, the importance of an intact and active vestibular apparatus is at once apparent.

Trained neuro-otologists have accordingly been placed in charge of the examination of the vestibular apparatus, and their word, in regard to the fitness of a candidate, is final. The applicant is examined for spontaneous nystagmus and his hearing is carefully tested. The vestibular apparatus is further tested by means of the turning chair. This, in addition to the nystagmus, includes the pointing, past pointing and falling tests. Men, eager to enter this most interesting branch of the service, often endeavor to deceive the examiners, as well as themselves. In other words, they endeavor to control, or over-correct, reactions due to stimulation which are perfectly normal and physiological. This results from those who have been examined endeavoring to instruct those who are waiting their turn. Such subterfuges are, as a rule, readily detected.

The Barany tests, which are used in the examinations, depend upon the fact that "when the kinetic-static labyrinth is stimulated, either by turning or douching the ear, two (2) phenomena are manifested, nystagmus and vertigo. Nystagmus results from stimuli passing from the vestibular end organ to the neuraxis and in the neuraxis through the fasciculus longitudinalis posterior to the eye muscle nuclei. Vertigo is perceived in the cerebral cortex and results from stimuli passing through the neuraxis to the cerebellum and thence to the cerebrum. Directly and compensatorily we have past pointing and falling, resulting from the vertigo." W. B. C.

Two Hundred Consecutive Tonsillectomies Under Local Anesthesia. Wilkinson, *Laryngoscopy*, Sept., 1917: 667.

The subject is interesting to the general practitioner, but the technique only to the operator. After a preliminary hypodermic of one-half grain codeine the anesthesia is produced by first painting the tonsil, and especially the crypts, with a six per cent solution of cocaine. Application of the latter to the pharynx and soft palate, as well, prevents gagging. One per cent solution of alypin or novocaine, or one-tenth per cent solution cocaine, with a few drops of adrenalin added, is now injected, first into the anterior superior surface of the tonsil and later beneath the mucosa of the pillars. The bleaching of the tonsil is an indication of the anesthesia. Traction with forceps is now made on the tonsil while the solution is injected beneath its base.

The Operation. The tonsil is grasped at its superior border with forceps and drawn forward, while an incision through the mucosa only is made around its superior pole. A second forceps now grasps the superior border of the tonsil at the incision and the mucous membrane is pushed further back with a dull knife. The superior pole is now grasped and the stripping continued further by dull dissection rather than cutting, the object being to hug the capsule as closely as possible. If properly performed, we really have an intracapsular dissection. The pedicle is severed by means of a snare, after which the cavities are painted, first with phenol and iodine solution and later with compound tincture of benzoin. There is the usual after care.

Among complications the author mentions nausea and faintness at the time of operation, primary and secondary hemorrhage, peritonsillar abscess and neuralgia of the throat. The latter is attributed to the inclusion of a

branch of the glosso-pharyngeal nerve in the scar. The case of abscess was due to the operation having been performed too soon after a preceding tonsillitis. Hemorrhage after seventy hours is considered secondary. There were three of the latter and four primary. In only one of each was it necessary to ligate the bleeding point.

The conclusions are as follows: (1) The operation can be done without pain. (2) Do not ever operate on a case which has had a recent tonsillitis. (3) There is less shock, less hemorrhage and less fever under local anesthesia. (4) The work can be more satisfactorily done and hemorrhage can be more easily controlled under local anesthesia. (5) Many cases can thus be operated on who could not, on account of other conditions, take a general anesthetic. (6) Local anesthesia is the anesthetic of choice in all grown subjects with very few exceptions.

W. B. C.

Value of Barany Tests in the Diagnosis of Vertigo, from Whatever Cause. Isaac H. Jones, M. D., *J. A. M. A.*, Sept. 8, 1917: LXIX: 10.

As a result of Barany's study of the labyrinth, "dizziness may no longer be regarded as something vague and mysterious. It becomes a clinical entity and may be intelligently studied."

The vestibular apparatus is composed of the internal ear and the nerve pathways from the ear to the eye muscles and from the ear to the cerebral cortex. The vestibular portion of the internal ear is the "ear mechanism." It is the disturbance of this mechanism, directly or remotely, that produces vertigo.

The author classifies the various types of conditions producing vertigo as follows:

(1) Lesions in the ear itself produce dizziness, staggering, nausea and vomiting.

(2) Lesions within the brain produce vertigo by affecting the intracranial pathways from the ear. Such lesions include tumor, hemorrhage, thrombosis, infarct, abscess, gumma, tubercle, specific neuritis, multiple sclerosis, syringomyelia, policephalitis and meningitis.

(3) Involvement of the ear mechanism by ocular disturbance either through centers or association fibres.

(4) Cardio-vascular disturbance may cause vertigo by producing ischemia or hyperaemia in any portion of the vestibular apparatus.

(5) Involvement of the ear mechanism by toxemias. Two classes are made: (a) Toxemias which have produced no cellular degeneration in the ear or nerve pathways. (b) Toxemias which have produced impairment of some portion of the internal ear or its pathways; for example, the toxins of syphilis or mumps, and also toxins from the gastro-intestinal tract or from focal infection.

In any case of vertigo, the ear mechanism should be examined. If the responses are abnormal, assistance will be given by the examination in locating the lesion. If the responses are normal the conclusion must be that the vertigo is either a functional neurosis, an ocular disturbance or an evanescent toxemia, the source of which must be sought.

C. E. P.

ABSTRACTS IN PATHOLOGY

The Neutralization of Antipneumococcus Immune Bodies by Infected Exudates and Sera. By Rufus Cole, M. D., *Jour. Exp. Med.*, 1917: XXVI: 453-475.

In this very important contribution to the study of the question of pneumococcus infection and immunity, the author points out some practical suggestions in connection with the pneumococcal immunotherapy.

1. There are found in the pneumococcal empyema fluids large amounts of soluble substance which neutralize pneumococcus antibodies, as shown by agglutination tests.

2. This explains why injection of immune serum, in such cases has not been followed by good results.

3. It is important that serum should be administered as early as practicable, in order that its efficiency may not be impaired by the antibody neutralizing substances found in the exudates and the blood serum.

A. A. E.

Researches in Regard to the Coagulo Reaction of the Syphilitic Serum.

By Dr. Hisakiyo Uemura, *Am. J. Med. Sc.*, 1917: CLIV: 533-547.

Just as all roads lead to Rome, so all the researches into the field of serology lead to physical chemistry. This new test for syphilis devised by Hirschfeld and Klinger bids fair to assume a very important position in the study of syphilis. The test is based upon the fact that the positive syphilitic serum depresses the coagulating activity of the thrombokinase found in organic alcoholic extracts (antigen). Complete technique is given.

A. A. E.

Further Studies with the Schick Test. Abraham Zingher. *Arch. Int Med.*, 1917: XX: 392.

Pseudo reaction depends on hypersusceptibility of tissue cells to the autolyzed protein of diphtheria bacilli which are present in the toxin broth used in the test. Pseudo reaction appears more rapidly than true reaction, reaching its height in 24 hrs. and in 3 or 4 days fading to a brown pigmented area. A moderate pseudo reaction of 24 hours may resemble a fully developed true reaction.

Two methods to distinguish between true and pseudo reaction.

(1). Make test and wait 3 or 4 days for final observation, when true reaction will be at height and pseudo reaction will be fading.

(2). Make ordinary test on an arm and on opposite arm a control of toxin solution which has been heated to 75° C for 5 minutes, heating destroys the soluble toxin, while the autolyzed proteins causing the pseudo reaction are unaffected. This will reveal pseudo and combined reactions. Observation should be made at 24 and 72 or 96 hours. If a pseudo reaction, both will appear rapidly and fall uniformly and generally without scaling.

If a combined reaction, at 24 hours the Schick test is more marked than the control. At 72 hours the positive reaction will be distinct while the control will be fading.

From observations on numerous children of varying age and on infants and their mothers he concludes that:

Pseudo reactions vary in intensity from slight redness to marked redness and infiltration, and that they are considerable after the 8th year.

The antitoxin immunity which an infant receives from the mother is of about 6 months' durations. If mother gives a positive test, infant is also positive. If mother gives a pseudo reaction, infant if young enough usually gives a negative reaction.

Largest number of positive reactions are in children between 6 and 18 months of age.

M. L. R.

Palaeopathology. Arnold C. Klebs. *Bulletin of Johns Hopkins Hospital*, 1917: XXVIII: 261.

Palaeopathology is a recently developed science dealing with investigation in the pathological change in the ancients, but not necessarily confined

to "preposterior" people or to fossil remains. As of cellular pathology, Virchow is said to be the original palaeopathologist, but from the survey by the Egyptian Government, in 1908-9, by Drs. Ruffer, G. Elliot Smith and Wood Jones dates the real beginning of palaeopathology as a distinct science. To date Egypt and Peru have been the sources of most information and while the data is as yet incomplete, there are a few important differences between the Pathology of past ages and of our own.

Osteitis deformans was pre-eminently the disease of the Ancient Egyptians, and no person seemed to be entirely exempt. It was characterized by evidences of inflammation proliferation of bone tissue, often actual stilactiles. Occasionally there was bending and bulging of the bone suggesting osteomalacia. The spine was most frequently involved even with entire fusion of the vertebrae. Other joints were involved with greater or less ankylosis. The long bone humerus, ulna, femur and phalanges sometimes showed tremendous deformities. The disease seems to have differed from the modern disease only in its much greater severity.

The absence of necrosis and of signs of ulceration and erosion distinguish it from tuberculosis and syphilis. Tuberculosis seems to have been rather infrequent among the ancient Egyptians as well as Peruvians. In a body from the 21st dynasty found at Philae marked kyphosis with necrosis of bone was found and also a psoas abscess was demonstrated grossly and microscopically. In this region a series of other cases was found. Palaeopathology gives little knowledge of tuberculous lesions, although pleural adhesions are not infrequently found.

Rickets as it is seen in pathology today with pelvic, thoracic and epiphyseal changes does not seem to have been common among archaic people.

The frequency of syphilis is a disputed point. Some specimens show typical syphilitic lesions including 2 skulls of prehistoric Aleutians in Alaska. Large bone defects where medullary gummata might have broken through, but without hyperostosis are characteristic but error is possible. The most characteristic lesion in dry flat bones is considered those left by cicatrization of gummatous peripheral osteitis. Changes found in the teeth may also help in the diagnosis.

The teeth of ancient Egyptians are usually good, but in the later dynasties evidences of decay, caries and suppuration are evident. Evidences of dentistry, even tooth-pulling are rare. Only one artificial tooth is reported and gold bands around some teeth are now regarded as modes of adornment rather than dental devices.

Injuries as judged from bone lesions are characterized by remarkable freedom from infection and a great tendency to natural repair. In the treatment of fractures, splints appeared in the 5th dynasty and later other appliances were in use.

For diseases of the soft tissues, bodies buried without embalming in the dry sand are best suited for microscopic study. Arterial lesions are among the most interesting. Most important are the presence of atheromata. Arterio sclerosis was astonishingly frequent and reached extreme degrees of calcification of the larger and smaller vessels. Ruffer, after decalcifying and staining could trace out all stages of the disease, almost as well as in a recent specimen, and they do not differ materially from the modern case.

M. L. R.

Further Studies in Experimental Athero-sclerosis. I. Adler. *J. Exp. Med.*, 1917: XXVI: 581.

The writer produces lesions in the aorta of dogs but especially in the pulmonary artery by injection of cholesterol in oil intravenously over a period of several months. The lesions were surprisingly similar to early human arterio-sclerosis save that deposits of cholesterol in the nodules with phagocytic cells were infrequent. The author considers that the main causative

factor is the increased blood pressure especially in the pulmonary arteries consequent to the frequent periodic obstruction due to injection of oil and cholesterol.

The lesion is primary in the media, in the zone adjacent to the elastica intima, and consists of disorganization and displacement of elastic and muscle elements with formation of caps fitted with plasma precipitate. In the pulmonary circuit, only the pulmonary artery and its larger branches are involved.

M. L. R.

DEPARTMENT OF THERAPEUTICS

Conducted by J. B. McGEE, M. D., Cleveland

Bright's Disease: J. M. Anders, in the *Medical Record* for August 25th, believes that in the treatment of chronic Bright's disease there are two principal criteria which should serve to guide us. They are the general condition of the patient as it is influenced by the progress of the affection, and the rate of metabolic excretion as determined by modern methods of examination. The rate of metabolic excretion must be gauged by the most modern and approved methods. The amount of urea excreted in the twenty-four hours is an indication of the outcome of the case, and should be carefully and repeatedly estimated. The strength of the patient is to be preserved by adapting sound hygienic, therapeutic and dietetic principles to the individual case. The chief control of chronic Bright's disease resulting from treatment is found in diet coupled with suggestions as to mode of life, rather than in drugs. He quite agrees with Shattuck that a varied diet is more likely than a monotonous one to promote the making of good blood and improving the general nutrition, and that of the myocardium in particular. Drugs, while not curative, may counteract certain dangerous tendencies resulting from interference with the kidney excretion. Saline cathartics in concentrated solution in the early morning, so as to produce two or three watery discharges daily, are useful. Mercury in all of its forms is to be omitted, since it has been shown that this drug has a selective affinity for the kidney, and is therefore harmful in its effects on Bright's disease. Unfortunately, the custom of prescribing mercurials at intervals in this complaint, especially when edema is present, is only too common, but it should not be approved by the medical profession. Such diuretics as caffeine and the ophyllin sodium acetate and other members of the purin group should be abandoned in treating this disease. On the other hand, we may employ digitalis and the salts of potassium, especially the citrate, either singly or in combination. Myocardial exhaustion, which manifests itself in the terminal stage of cirrhotic kidney, with signs of cardiac dilatation, scanty albuminous urine and anasarca, requires heart tonics and stimulants. Digitalis is here of value. If uremic symptoms ensue, starvation for two or three days is advisable. Venesection and salt solution often give much temporary relief. Morphine or chloral may be needed.

Pneumonia: Julius Broder, in the *New York Medical Journal* for September 15, treats of the serovaccine treatment in pneumonia. His method consists in plenty of fresh air, a nonputrefactive fluid diet, and skillful and careful use of vaccines and serums. In acute lobar pneumonia, cardiac failure is the greatest danger to life, and is usually due to the intensity of the septic infection. This form of pneumonia of an aggravated type, whose mortality rate is ordinarily very high, responds remarkably to the serum treatment, the temperature falling rapidly after the injections. The first indication is to antagonize the injurious influences of the specific organisms on the blood and tissues. The second is to relieve and subdue the distressing symptoms. Both of these indications are met by the proper use of vaccines and serums according to the type of bacteria present and

the symptoms produced. The pneumococcus generates pneumotoxin, which causes pneumonic intoxication, and the streptococcus forms toxins which cause a general infection. These are the indications for the use of the serums. He administers the antipneumococcic serum, the antistreptococcic serum, the autogenous serums or a combination of serums. He employs the antistreptococcic serum in doses of ten to thirty or forty c.c., repeated in from twelve to forty-eight hours as needed. In the broncho-pneumonic type he uses the combined vaccine, and gives about 500 million and repeats in from six to twenty-four hours, and in most cases the broncho-pneumonia will go through its course without any alarming symptoms and in a rather subdued manner. With added infection and complications he gives antistreptococcic serum in large doses, at least 30 c.c., repeated in twenty-four hours, if necessary, and its use continued until the pyrexia is relieved and the distressing and alarming symptoms subside. He believes that no drug will bring down these alarming symptoms as the serum will, and especially in the cases with delirium and restlessness. To combat the danger of cardiac failure, antistreptococcic serum should be given promptly and efficiently. The commonly used drugs, he states, as quinine and urea hydrochloride, pituitrin, camphorated oil and colloidal iodine, and digalen, do not seem to meet the indications. He has used serums and vaccines extensively in private work and hospitals, with uniformly good results. The isolation of the disturbing bacteria and use of the corresponding antitoxin are necessary. Drug therapy at best combats the symptoms and does not act directly on the septic infection.

Goitre: In the *Therapeutic Gazette* for September (from *Northwest Medicine*), Moore hopes that in the near future some one of the many research workers will isolate the actual cause of endemic goitre. That the disease is becoming more prevalent no one can doubt, and until the actual cause is known, treatment must necessarily be empirical. Whether the disease is caused by some infective organism or by some specific bacteria, we do not know, but that drinking water carries the active agent is the consensus of opinion of investigators. Whatever the nature of the active organism, we know that boiling or distilling drinking water renders the same innocuous. This, then, is the first step in the medical treatment, and in simple non-toxic goitres of adolescence this alone is sufficient to cure. Should the goitre not disappear, the Gunn method may be used. This consists in using iodine externally and internally for not more than four weeks. The iodine is then stopped and a five per cent phenol solution is injected into the gland substance, one or two injections of 50 to 100 minims being usually sufficient to effect a permanent cure. The patient should be closely watched while taking the iodine, as a non-toxic goitre may become toxic from the use of iodine. Moore had one case develop an exophthalmos with marked nervous and cardiac symptoms. Simple hyperplastic non-toxic goitres yield readily to treatment. This is the class very common in young women from eighteen to thirty years of age. In hyperplastic goitres, use iodine very carefully, and for a short time only. Depend on rest, diet and injections of phenol. If improvement is not marked early in the treatment, discontinue and advise operation. On cystic goitre the treatment has little or no effect. Many of these cases respond to X-ray exposures, but as a rule operation will be necessary. To waste time with a markedly toxic goitre would be criminal. In such cases nothing but the early removal of a large portion of the gland is going to save the patient or prevent serious degenerative changes in myocardia and kidneys. If the patient is seen during the toxic wave, put her to bed, give no drinking water except that which has been boiled or distilled, clean out the intestinal tract, put on a meat-free diet, and give quinine hydrobromate 5 grains and ergotin 1 grain four times a day. Inject boiling water into the gland, if no improvement follows or toxæmia increases and the heart action is so bad that operation is not advisable. Operation is indicated as soon as the toxic wave has subsided.

Practical Geriatrics: In the *Medical Council* for September, I. L. Nascher considers geriatrics or the treatment of senile cases. Senile degeneration is not a pathological process, and it cannot be halted, though some degenerations may be retarded if they are hastened through controllable causes. Acute diseases in the aged cannot be treated as in earlier life, as the pathological process acting upon degenerating tissue does not produce the same effect as when acting on the healthy tissue of maturity. The symptoms are different, drugs and other therapeutic agents act differently, and many drugs cannot be used in the aged, as their secondary or incidental effects are often more pronounced than the primary or desired effect. Chronic constipation is the most frequent disorder in old age, and to it can be traced most of the senile ailments. In the majority of senile cases the constipation is due to the combined effect of several causes acting simultaneously. There is atrophy and atony of the muscular fibres, and hence lessened peristalsis. There is an enteroptosis with kinks at the flexures, causing partial obstruction with consequent delay at the flexures. Atrophy of the intestinal glands with consequent diminished secretion causes more difficult propulsion and dry feces. Each of these causes require its appropriate remedy. An ideal combination for the usual senile constipation is aloin, rhubarb and paraffin oil. It is folly to give a peristaltic stimulant where the principal trouble is an enteroptosis with kinks, or a dry gut and dry feces. With a marked enteroptosis, an abdominal binder will do more good than drugs, and where there are relaxed abdominal walls a binder and massage are indicated. Determine the cause before prescribing the remedy. The ancient dictum that doses must be diminished in childhood and old age does not hold good in old age except with sedatives, and sedatives are seldom required in senility. Stimulants and tonics must be given in large doses and if they are used for a long time the dose must be constantly increased. Iron is apparently not assimilated in old age unless there is a very low hemoglobin percentage. Calcium should be avoided, as he does not know of a single senile condition in which calcium medication is beneficial. In the young, bromides are beneficial in diseases marked by tremor, but the bromides are useless or harmful in paralysis agitans and senile tremor, the principal diseases marked by tremor occurring in old age. Before prescribing for insomnia the physician should determine how much sleep the patient gets at night, and in the short naps that an old person generally takes during the day.

Chronic Heart-block: John M. Blackford and Fred A. Willius, in the October number of the *American Journal of the Medical Sciences*, report upon nine cases of chronic heart-block, and the therapeutic effects of a drug not hitherto mentioned in cardiac treatment, which has been apparently successful in increasing the idioventricular rate, with marked relief of symptoms. Complete chronic heart-block is now recognized to be due in all cases to a functionally complete break in the auriculo-ventricular bundle. Thyroid extract will excite a tachycardia in the normal organism. A large mass of clinical evidence without laboratory proof shows that thyroid extract markedly affects the myocardium, as illustrated by the irritable and rapid action with concomitant myocardial degeneration of the thyrotoxic heart. In a case of chronic heart-block they thought of attempting to increase the idioventricular rate by giving large doses of alpha iodine, the active constituent of the thyroid recently isolated by Kendall. Its use in four cases was followed by marked improvement in the patient's condition of nutrition, and by increased ventricular rate and cessation of the Stokes-Adams syndrome, though one patient has since died. They summarize as follows:

1. Alpha iodine quickens the idioventricular rate in complete heart-block. This is followed by marked subjective relief to the patient. The drug must be pushed to the tolerance of the patient and the dose then reduced to the

largest amount that can be taken without discomfort. The auricular rate increases much earlier and proportionately to a much higher figure than the ventricular rate.

2. In nine cases of complete heart-block eight patients gave evidence of definite valvular disease, mitral disease predominating. The ninth patient had advanced nephritis.

3. In none of these nine cases was there a probable venereal etiology.

4. Six of the patients gave history of probable etiological infections with the streptococcic group, *i. e.*, chronic arthritis (1 case), la grippe and tonsillitis (5 cases). Diphtheria seems to have been responsible in two instances. The ninth patient did not give a history of previous infection on careful inquiry, but at autopsy a large mulberry calcified nodule was found involving the bundle and one cusp of the aortic valve. No other pathology was evident.

5. Digitalis should be used in all cases of chronic heart-block in which there is evidence of myocardial insufficiency.

6. They do not know the effects of long-continued use of large doses of alpha iodin in patients not suffering from thyroid insufficiency. Therefore they believe that for the present this medication should be used only to relieve the Stokes-Adams syndrome in chronic heart-block.

Liquid Petrolatum: Heinrich Stern, in *American Medicine* for August, writes as to the use of liquid petrolatum in the treatment of gastric affections. He found in rather an accidental manner that liquid petrolatum may be utilized for exactly the same purposes as olive oil in the symptomatic relief of various diseases and disorders of the stomach. Patients affected with certain gastric ailments, suffering at the same time from intestinal stasis, who were in the habit of taking liquid petrolatum for this condition, in many instances cease to complain of concomitant stomach disturbances. Among the affections which are especially symptomatically amenable to the administration of liquid petrolatum are hyperchlorhydria, excessive acidity due to organic acids, pylorospasm, and gastroduodenal ulcer. It is probable that the mineral oil acts in the upper gastric tract much in the same manner as it does in the colon, that is, mechanically, by lubricating the walls of the stomach and duodenum. The dose of liquid petrolatum in the amelioration of gastric disturbances should be a rather large one. Two or three large tablespoonfuls should be administered as a rule; according to the case, it should be given either before or after meals and if necessary at bed time. In general hyperacidity and hyperchlorhydria, when the increased gastric acidity is due to secretory disturbances, it is best to prescribe the mineral oil to be taken from fifteen to thirty minutes after meals. The results in such cases will be found to be universally good. If, however, the acidity is due to gastric atony and hyperfermentation—when, in other words, the acidity is caused by organic acids, the logical time of administration appears to be about twenty or thirty minutes before meals. Some cases do best on a tablespoonful before as well as after taking food. In pylorospasm, and probably also in cardiospasm, it seems to him that the affected parts should be bathed in the mineral oil for as long a period as possible. In these cases he found the most practical benefit by administering the oil in very small and very frequent doses on the critical days. In ulcer of the stomach or duodenum the mineral oil should be given in broken doses before, during and after meals. It is in these cases, in fact, in which the limit of the doses is dictated by the laxative effect. Rest, of course, is paramount when there is an active ulcerative process, and the diet must be as little irritating and as small in amount as possible. In all these and similar gastric affections it appears that the mineral oil is able to replace the alkali treatment in protracted cases.

NEW AND NONOFFICIAL REMEDIES

Concentrated Solution Sodium Hypochlorite—Mulford.—A 5 per cent aqueous solution of sodium hypochlorite containing free chlorin equivalent to 0.2 to 1.0 per cent of sodium hypochlorite. One volume is diluted with nine volumes of water and the amount of boric acid required (stated on the label) to render the solution neutral is added. This dilution is used in the irrigation method of treating infected wounds. The H. K. Mulford Company, Philadelphia, Pa. *Jour. A. M. A.*, Sept. 1, 1917, p. 727).

Calcreose.—A mixture containing approximately equal weights of creosote and lime in chemical combination. It is stated that, when administered internally, calcreose has the same actions as creosote. It is claimed that it is not likely to produce gastric distress, nausea or vomiting. Calcreose is sold in the form of a powder, as Solution Calcreose and as Calcreose Tablets, 4 grains. The Maltbie Chemical Co., Newark, N. J.

Betanaphthol Benzoate—Calco.—A brand of bethanaphthol benzoate, complying with the New and Nonofficial Remedies standards. The Calco Chemical Co., Bound Brook, N. J. (*Jour. A. M. A.*, Sept. 8, 1917, p. 821).

Thiocol—Roche.—Thiocol is the potassium salt of orthoguaiacol sulphonic acid, obtained by sulphonating guaiacol. Thiocol-Roche acts as a sedative expectorant. It has the advantage over guaiacol in that it is comparatively tasteless, does not disturb digestion and is non-toxic. It is claimed to be useful in the treatment of diseases of the respiratory tract, incipient tuberculosis and certain diarrheas. Thiocol-Roche is supplied in the form of a powder, as Syrup-Thiocol and as Thiocol-Roche Tablets, 5 grains. The Hoffmann-LaRoche Chemical Works, New York (*Jour. A. M. A.*, Sept. 15, 1917, p. 911).

Dichloramine-T, Abbott.—Paratoluenesulphonedichloramide. This is said to act much like chlorazene, but capable of being used in solution in eucalyptol and liquid petrolatum, thus securing the gradual and sustained antiseptic action. Like chlorazene, dichloramine-T, Abbott, is said to act essentially like the hypochlorites, but to be less irritating to the tissues. Dichloramine-T, Abbott, is said to be useful in the prevention and treatment of diseases of the nose and throat. It has been used with success as an application to wounds, dissolved in chlorinated eucalyptol and chlorinated paraffin oil. The Abbott Laboratories, Chicago.

Chlorinated Eucalyptol—Dakin.—Eucalyptol chlorinated at ordinary temperature. It is used as a solvent for dichloramine-T. The Abbott Laboratories, Chicago.

Chlorinated Paraffin Oil—Dakin.—Liquid petrolatum, chlorinated at ordinary temperature. It is used as a diluent for solutions of dichloramine-T in chlorinated eucalyptol—Dakin. The Abbott Laboratories, Chicago.

Hyclorite.—A solution of chlorinated soda, each 100 Gm. being stated to contain sodium hypochlorite 4.05 Gm., sodium chloride 3.20 Gm., Calcium hydroxide 0.25 Gm., inert salts 0.92 Gm. It contains not less than 385 per cent available chlorine. Hyclorite has the action and uses of solution of chlorinated soda, U. S. P., but its available chlorine content is greater. One volume of hyclorite diluted with seven volumes of water has the same available chlorine content as neutral solution of chlorinated soda, N. N. R., and is said to be isotonic. The available chlorine content of hyclorite decreases at the rate of about 12 per cent per year. In order that allowance for this deterioration may be made in the preparation of dilutions to be used in the irrigation treatment of wounds, each bottle of hyclorite bears the date of bottling. The General Laboratories, Madison, Wis. (*Jour. A. M. A.*, Sept. 29, 1917, p. 1081).

During September the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Non-official Remedies:

The Abbott Laboratories :

Chlorinated Eucalyptol—Dakin.
Chlorinated Paraffin Oil—Dakin.
Dichloramine-T, Abbott.
Halazone—Abbott.
Halazone Tablets—Abbott.

General Laboratories :

Hyclorite.

Schering & Glatz :

Camiofen Ointment.

The Academy of Medicine of Cleveland

ACADEMY MEETING

The one hundred and fortieth regular meeting of the Academy of Medicine was held Friday, Sept. 28, 1917, at the Cleveland Medical Library, the President, Dr. R. K. Updegraff, in the chair.

The minutes of the last meeting were read and approved. The minutes of the Council meetings of June 26th and July 31st were read and approved.

Dr. B. E. Sager presented a patient having diabetic gangrene of the toe which he had treated by alkaline medication and therapeutic light with very good results and without keeping the patient from his work. He also presented a patient in whom an extensive burn scar of the hand had been aided in healing by the use of therapeutic light and in which the scar was minimum.

Dr. H. E. Mitchell presented a patient who has had a nervous affection for some eight or nine years which has prevented him from doing his work. Owing to the fact that the patient is without financial resources, Dr. Mitchell hoped that some of the men interested in these cases would communicate with him that he might arrange for the patient to be examined with a view to making a diagnosis and outlining treatment.

The chairman, Dr. Updegraff, presented the speaker of the evening, Lieut. Col. E. B. Hardy, D. S. O. Officer Commanding Military Base Hospital, Toronto, Ont.

In opening, the speaker brought to the Academy of Cleveland, greetings from the Toronto Academy of Medicine and expressed the sincere appreciation of Canada for the aid the United States has given in the war. He pointed out the feeling of close comradeship that now exists between the two countries and how it will become closer and more sympathetic as they labor together in the great war. Canada had only a skeleton Medical Service at the outbreak of the war. Col. Hardy went overseas with the first contingent of Canadian troops and saw at first hand the primitive medical organization. Canada now has a thoroughly equipped and organized Medical Service, but she learned only through bitter experience. The United States should profit by the experience of Canada and avoid similar circumstances.

The speaker in giving some of the experiences of a Medical Officer at the front spoke wholly from his own experience and traced out the progress of a medical officer from his enlistment up to the time that he reaches his front line trenches. He considered the incentive for a medical man to enlist. Why do medical men enlist? Not for mercenary reasons surely, for the pay is only existence. The craving for excitement may be the motive for the enlistment of a recent graduate, but hardly for men with families and financial obligations. Part time duty is not at all satisfactory and a man must enter the service wholly. The real incentive for such a line of action is the desire of every loyal citizen to "do his bit" that the liberty and freedom that he enjoys may exist.

The first requirement is that the Medical Officer be fit physically. There are three classes of service based on physical grounds: (1) Fit for service in the first line trenches. (2) Fit for service in the lines of communication, and (3) fit for service at home. When a man has once accepted a commission he at once loses his independence of action as an individual. He is responsible to his senior officers, he must learn military discipline and everything, even his clothes are predetermined and he has no choice. He is allowed thirty-five pounds of baggage and he usually goes the limit on the first trip.

His first taste of war is at the training camp. These camps are chosen for other reasons than comfort and life here is not Utopian, especially in winter. Rain seems to be incessant when one is under canvas and the food is apt to be cold and unpalatable. But this is all part of the training and makes a Medical Officer out of the doctor. Instruction in these camps is usually supplied by a non-commissioned officer, a sergeant for example and the normal sergeant loves to bully the men to a certain extent. Again this is part of the training. Here also the Medical Officer must learn many details, infantry formation, marching orders, etc. He is taught "stretcher drill" and learns to teach enlisted men how to handle the wounded properly. He learns the rudiments of military law since he may later command men: he learns what are military crimes and how to prefer charges: when to arrest and when not to do so. Here he learns military rank and how to distinguish the various officers. He is taught how to lay out a camp and pitch a tent; how to build a trench fire and how to cook; what constitutes camp sanitation and a hundred other such things. He lives on a more or less rigid schedule and every hour of the day is taken up with some sort of military activity, physical training, drills and lectures. It all tends to harden a man's muscle and make him both mentally and physically fit for active duty. When he reaches a place where he can "stand the pace" in the training camp the Medical Officer is then attached to a Reserve Battallion where he does, under supervision, the work of a regular regimental medical officer. After being here for a varying period of time he is sent to a Base Hospital where his actual military work begins.

The Base Hospital may be located anywhere in England or in France, in the latter case usually coast towns. The hospital proper may be constituted in any one of several ways. The "hut system" seems to be the most satisfactory to the British Army but at times the hospital may be in a converted hotel or similar structure. Here the Medical Officer encounters for the first time the official or formal mess. One meal a day, usually dinner, is the formal meal and here no irregularities of dress are permitted. Rank is laid aside and the junior officers have the privilege of criticizing their superiors.

In the Base Hospital the routine ward work is largely the same as in a civilian hospital plus military discipline. The Medical Officer must be on his ward by nine in the morning and must see all his patients every day. All hospital records must be accurate and always up to date. The case history is started by the admitting officer who enters all the regimental data of the case. The ward doctor must enter a concise and accurate history and record of physical examination and treatments together with notes on all consultations and the progress of the case, etc. He must also order all diets and treatments. He is responsible for the general care of the ward both sanitary and military. Any action on the front keeps the medical officer busy. All ambulance trains must be met regardless of the hour and every Medical Officer must be on his ward to admit new cases and must stay there till the work is finished.

The next medical post toward the front is the Casualty Clearing Station. This is usually located near the "rail head" or the most advanced point to which a railway train can run with any safety at all. They are located here since they must depend on the railroad for the transportation of the

wounded to the rear. Supplies are also unloaded here at what is called the "supply dump" and as a result these railroads are the objects of frequent aeroplane attacks and bombardments. The Casualty Clearing Stations may suffer damage at such times. The hospital itself is usually disguised by its mottled painting but at times dependence may be placed in huge Red Crosses on the roofs, to protect against damage in aeroplane raids. The Medical Officer's duties here are about the same as at the Base Hospital but naturally there is more excitement and variety. Still under pressure of work shell fire and aeroplane raids become part of the daily routine. The food is good the work is interesting and there is a good opportunity to learn the language.

The next advanced medical post is the field dressing station, usually located about two and one-half miles back of the firing line. There are many deep cellars with stone arched roofs in this region and use is made of these for it is the zone of heavy shell fire. The ruins of houses near the roads are chosen when possible, again with the idea of facilitating the transportation of wounded. Every one of these temporary stations must be thoroughly cleaned before they can be occupied. Whitewash is used extensively in this sort of work, preceded in every case possible with plenty of soap and water. Every patient that passes through here is stripped and thoroughly examined and any emergency surgery is done. Whenever possible all major operations are referred to the Casualty Clearing Station. The wounded are fitted out with clean dry dressings, dry pajamas and dry blankets before being sent to the rear.

The next medical post forward is the Advance Post. This is usually about a mile from the firing line and is in the area of heaviest shell fire. The buildings are all razed by the fire and only cellars and dug-outs are available for use as dressing stations. These stations are as far forward as a motor car can go, but usually the roads are all located by the enemy and subject to heavy fire and the wounded must be transported at night. Night travel is complicated by numerous shell holes of varying size and depth in the roads. In an attempt to keep them passable every ambulance returning to the front carries a number of bags filled with sand, bricks and mud and these are thrown into the holes. But even so the transportation of wounded is very difficult. In these stations the men are patched up only enough to carry them back to the advance dressing station.

The next and last medical post toward the front is the Regimental aid post. The Regimental Medical Officer is in the front line trenches and while on duty is responsible for the general sanitary conditions of about a thousand men. His headquarters is with the battalion commander. His duties here are fairly heavy and dangerous. There is a sick parade every morning and after this his work consists of inspecting the sanitary conditions of his part of the line, and since this area is under constant observation the risk of stopping a sniper's bullet is always present. The Medical Officer is at this post for periods usually of about six days, alternating these periods with an equal period of rest at some point farther back. When on duty he never goes back of the regimental aid post. He is allowed six stretcher bearers and with this assistance he must get all the wounded back from the front line to the regimental aid post and patch up their wounds temporarily. From this point the ambulance companies take charge of the wounded and transport them back to the advance post. The less severely wounded walk but those seriously wounded are carried by any means available; hand carried stretchers, wheel stretchers, horse ambulances or even temporary narrow gauge railroads with cars capable of carrying two stretchers. In this manner the wounded reach the Advance Dressing Station where the treatment is slightly more elaborate and where a man's hospital tag is started with the essential data.

If a man's wounds are only superficial and do not incapacitate him for more than a day he may return to the front from the Advance Dressing

Station. If they are superficial but yet require more than one day's treatment he is sent to a division Rest Station where slight injuries and minor ailments are cared for.

If seriously wounded the man is sent back to the Casualty Clearing Station, where the equipment for proper treatment and care can be found. All sorts of surgery is done here, as well as medical treatment. Access can be had even to the X-ray by means of a traveling X-ray equipment. From the Casualty Clearing Station the wounded are distributed to the various Base Hospitals for further treatment.

To a question of Dr. Humiston's regarding how many men return to the trenches from the Casualty Clearing Station and the capacity of the ambulance company, Col. Hardy replied that 85% of wounded men had wounds classified as slight. The capacity of the ambulance company is as great as the need. In six days during the Somme engagement 6,000 men passed through one advance dressing station, the medical men working constantly for as long as twelve hours at a stretch without a single pause. When asked concerning the proportion of medical and surgical cases, he gave the following figures covering a certain period of time:

3,000 killed in action.

9,000 died of wounds.

48,000 wounded and recovered.

454 died of disease.

At the close of his talk, questions were asked by Drs. W. H. Humiston, H. J. Lichty and R. K. Updegraff, which brought out the fact that the percentage of severely wounded men was not as high as one would expect, that general sickness other than that from wounds was practically negligible, and that during action a great many dressings were handled by the surgeons in a surprisingly short time. At one time Dr. Hardy and two other surgeons, standing each between two operating tables with assistants, dressed 860 men between the hours of eight and eight.

Lieut. Ben R. McClellan and Lieut. M. B. McGonigle were detailed by the War Department on request of the Ohio State Council of National Defense to enlighten the profession in Ohio on military matters. Very unfortunately they were suddenly ordered to Fort Benjamin Harrison, and hence were not able to be present. In their absence Dr. C. A. Hamann gave the following data regarding the situation in Ohio:

He stated that the Medical Defence Board had asked for 1,150 Medical Officers, but to September 1, 1917, only 676 had enlisted. At present enough men are available for the needs of the Army, but when the National Army is complete there will be much greater need and opportunity for service.

On request the Secretary of the Academy read the following:

INFORMATION RELATING TO APPOINTMENTS IN THE MEDICAL OFFICERS' RESERVE CORPS OF THE ARMY.

Under the new regulations for examination of candidates for appointment in the Medical Officers' Reserve Corps of the Army, the candidate is required: First, to submit his application in writing to the Surgeon General of the Army. Second, the application should be accompanied by two testimonials, and, Third, the Personal History Blank, properly filled out as directed thereon after having the same certified to before a notary public.

The requirements for appointment are that the applicant be a citizen of the United States between 22 and 55 years of age, a graduate of a reputable medical school, legally authorized to confer the degree of doctor of medicine; he must be qualified to practice medicine in the State in which he resides and be in the active practice of his profession. The examination is physical

and professional; the professional examination to be oral except in case of failure, when it will be written. Such written examination will be in the following subjects:

1. Practice of medicine, including etiology, clinical description, pathology and treatment of diseases.
2. Surgery, principles and practice.
3. Obstetrics and gynecology.
4. Hygiene, personal and general, especially as to the prophylaxis of the more prevalent epidemic diseases.

Specialists will be examined in their specialties.

Commissions are issued for a period of five years, at the end of which time officers may be recommissioned in the same or higher grades, that is, captain or major.

The Act of June 3, 1916, creating the Medical Officers' Reserve Corps, provides that in time of peace only those of the grade of first lieutenant may be ordered to active duty and this with their own consent, but in times of war the services of officers of all grades are at the disposal of the Government.

Dr. Humiston then spoke in behalf of the local District Exemption Board, and asked the co-operation of the members of the Academy in the examination of appealed cases. The Board here must consider cases from ten counties and the City of Cleveland as well. He urged all men examining such cases to be impartial in their judgment and decide the case on its merit only, and to give a clear and concise statement of the conditions present. Affidavits from the physicians are required in such cases.

He called attention to the fact that the local Board had established a precedent for the national policy of exempting medical students.

ACADEMY MEETING

The one hundred and forty-first regular meeting of the Academy of Medicine was held Friday, October 19, 1917, at the Cleveland Medical Library, the President, Dr. R. K. Updegraff, in the chair.

The minutes of the last meeting were read and approved. The minutes of the Council meeting of October 9th were read and approved.

Dr. Updegraff called attention to the nominating ballots and stated that the chair had appointed as tellers individuals who had been officers of the Academy and were not available for the offices to be filled.

He further commended the presentation at the previous meeting by Dr. Mitchell of a case for diagnosis. He stated that the patient had been pretty thoroughly studied since then by some of the members without arriving at a definite diagnosis. He believed that provision should be made for handling just such cases and the members encouraged to present them for diagnosis.

Dr. Updegraff then called upon Dr. C. F. Hoover, who gave a talk upon medical problems as met at the front.

Program:

Medical Aspects of the War, by Major C. F. Hoover, Lakeside Hospital Unit.

Medical work in the war zone is easy, especially after one has learned all the details of the "paper work" that is necessary in military medicine. Perhaps the main reason for this is the fact that most of the patients are from bodies of picked men in perfect physical condition, all of about the same age and subject to the same conditions during active service. There is no great variety of diseases; except for trench fever and gas poisoning all the phenomena are old ones encountered in civilian practice.

Typhoid Fever and Paratyphoid Fever: Typhoid fever and paratyphoid fever are rare in the war zone. In the diagnosis of these conditions reliance is placed in the Widal agglutination test and not in blood cultures.

Trench Fever: Trench fever is called by the Germans "Five-day Fever," owing to its tendency to last about five days. The symptoms in trench fever are severe pains in the legs, pain in the eyeballs and occasionally in the muscles. Pressure on the tibia produces pain probably due to periosteal edema. This pain and tenderness persist for as long as ten days after the fever is normal. A sporozoon has been isolated from the blood and muscles in some cases. The diagnosis is easy after a time, usually after the third day of the disease. The spleen is slightly enlarged, but not so large as in typhoid fever. The leucocyte count is of no aid in the diagnosis. The disease is not fatal. In differential diagnosis one must not confuse it with appendicitis, as is possible when the abdominal muscles are involved. The main point of differentiation lies in the fact that the pain and tenderness is the same when the muscle is relaxed or contracted in a case of trench fever.

Trench Foot: Dr. Hoover saw but two cases of trench foot. One was a "pink foot" and one was a "pale foot." Both came on after standing in water continuously for three days. The symptoms are severe burning and pain. The condition suggested the erythromyalgia of Weir Mitchell or a case of obliterative endarteritis. In all cases it is due to prolonged exposure to cold and moisture, with subsequent vaso-motor changes, thrombosis of the arteries and veins, death of the nerves and finally gangrene. All these changes have been seen histologically in amputated feet. The treatment is the same as for a similar condition anywhere.

Trench Nephritis: There is nothing characteristic or peculiar about trench nephritis; it is the same as nephritis anywhere. The common symptoms are edema, hypertonus and uraemia. The hypertonus is almost constant, but not very high, the diastolic pressure of 110 falling to perhaps 85-90 on treatment. The difficulty presented by these cases is to determine whether the attack is an acute one, or is the exacerbation of an old chronic nephritis. The best point of distinction is the regular occurrence of cardiac enlargement in all cases of chronic nephritis. The treatment is the same as for nephritis in civilian practice. Hot packs, milk diet, saline catharsis, etc.

Shell Shock: The British Army will not allow the diagnosis of "Shell Shock," but requires a more specific diagnosis. When a shell explodes three things may happen: (1) A man may be struck by flying fragments of the shell, with characteristic injuries; or, (2) the percussion wave from the explosion of the shell may inflict any one of a variety of injuries, hemorrhages anywhere, superficial or deep; ruptured intestine, etc. (3) Functional disorders not due to the above mentioned causes; phobias of all sorts caused by a knowledge of all the manifold injuries that might befall one are rather common. But the actual number of neuroses is small, considering the legitimate fears that a man may have. The treatment of these neuroses is no different from that in civil practice.

Gas Poisoning: As seen in the Base Hospitals, the picture presented by these cases is apt to be misleading, due to time that had elapsed since the gas was inhaled. It usually takes from three to ten days for a man to get from the front line of trenches back to the Base Hospital, and as a result the clinical picture has changed considerably by that time. On reaching the Base Hospital there may be only signs of a more or less severe bronchopneumonia or in some cases no signs of any interference with the ventilatory function, internal or external respiration or the mass movement of blood through the lungs. But the patients having gas poisoning complain for a long time that they cannot exercise at all without losing consciousness. As long as they lie perfectly quiet in bed they are comfortable and show no signs of sickness. But even sitting up in bed is sufficient to bring on loss of consciousness. Those who have inhaled a larger amount of the gas simply lose consciousness and die without regaining it.

At first the Germans used chlorine gas, which was less dangerous, since it was visible and caused violent irritation to the upper respiratory tract, thus apprising the men of the danger. Phosgene gas, on the other hand, is colorless, odorless and non-irritating to the upper sensitive part of the respiratory tract. The only symptoms are a slight itching about the nose and soon loss of consciousness. There is no cough or dyspnoea. As said above, the common thing is for a man to lose consciousness and die.

Phosgene (COCl_2) is made by bringing together chlorine and carbon monoxide in the presence of some catalytic agent. It is then put into large shells under three atmospheres pressure and these shells are shot from howitzers into the enemy lines. On striking these shells burst with a loud "pop," like opening a champagne bottle. At first these shells were mistaken for "duds" or ordinary shells that did not explode, and many men lost their lives investigating these supposedly defective shells. The gas is most effectively used when there is a slight breeze toward the lines of the enemy. A strong wind will carry the gas for as long a distance as twelve miles and non-combatants may suffer.

When inhaled into the lungs phosgene is inert till it reaches the finer radicles of the bronchial tree, where it encounters water or moisture. In the presence of moisture the gas forms two molecules of hydrochloric acid and one molecule of carbon dioxide, and as this reaction goes on in the small bronchioles beyond the distribution of the sensory nerves, there is no discomfort at all and no cough. The irritation of the acid in the bronchioles causes marked pulmonary edema, as can be demonstrated by auscultation. In spite of the marked pulmonary involvement there is no cyanosis at all, but rather a typical slaty gray. This can be explained in this way: In the pulmonary edema there is a layer of serum or moisture between the respiratory membrane and the alveolar air. Carbon dioxide is readily soluble in water (twenty-five times as soluble as oxygen) and consequently there is little or no interference with the passage of CO_2 from the blood into the edema fluid present in the infundibulum. But oxygen is but slightly soluble in water, hence there is marked disturbance in the transfer of oxygen from the alveolar air into the blood, since it must go through the layer of edema fluid, in which it is relatively insoluble. Another factor that complicated the interchange of oxygen and carbon dioxide is the foam churned up in the alveoli by the respiratory movements. Oxygen present in the alveoli in the form of foam is not available for respiration. So what really happens is that these men die of anoxemia or want of oxygen in the blood. This also explains the absence of cyanosis. The treatment used for these cases is the inhalation of oxygen under pressure, thus saturating the layer of fluid separating the respiratory membrane from the alveolus and thus bringing more oxygen directly in contact with the respiratory membrane. This does not clear up the pulmonary edema at all, but after the inhalation of oxygen for perhaps ten minutes the anoxemia is relieved.

Ordinarily there is no emphysema except at the borders of the lungs. A generalized pulmonary emphysema, as shown by the behavior of the costal margins, both margins being retracted on inspiration, means more than pulmonary edema. When this is present it is caused by bronchiolar spasm and this can be relieved by adrenalin. This condition is rare. The right auricle is commonly enlarged in cases of gas poisoning, but since there is emphysema of the lung borders the percussion findings are not at all accurate in representing the real size of the heart. Again, the inspection of the costal margins and the subcostal angle is of great value. In cases with a dilated right auricle the upper part of the costal margin, from the ensiform down to the ninth costo-chondral junction is retracted on the right during inspiration. Recognition of dilatation of the right auricle is important, since it can be treated and it responds very well to treatment. Digitalein produces a prompt effect.

Among the late effects of gas poisoning one may get broncho-pneumonia, hemorrhagic encephalitis and myelitis. In these cases of hemorrhagic diseases the hemorrhage occurs in the white matter and not in the gray matter. The explanation of this is not clear.

Among the lesser known gases used in the war are two others that came under Dr. Hoover's observation. The one, emetic gas, is used by the Allies at the same time as the phosgene, its composition being a secret. It is not absorbed by the gas masks of the Germans, but passing through the mask it produces profuse vomiting. The man inhaling this then has the alternative of smothering in the mask or taking it off and exposing himself to the phosgene. Blister gas is another secret compound used by the Germans. It has the property of almost instantly producing huge blisters on the skin. These are very superficial, but as the face is often involved it renders a man perfectly helpless for several days. The conjunctivae are very edematous where the eyes have been exposed. There are no permanently bad effects from this gas. Blister gas has wonderful penetrating power and will produce blisters through several thicknesses of wool cloth. As yet the Allies have no means of protection against it.

In answering questions Dr. Hoover spoke again of the remarkably few neuroses that are found in the war zone. He also mentioned that he did not see a single case of Basedow's disease that developed during the war service, and furthermore he had not heard of a case, and this is all the more interesting in view of the fact that the men were exposed to all the factors that are commonly supposed to contribute toward the production of the disease.

He had seen over 7,000 individuals and not a suspicion of a case. At a Base Hospital where the permanent population is about 60,000, and where 15,000 are coming and going daily, and at times as high as 2,000 wounded are received in a night, he had particularly inquired of the officers as to occurrences of Basedow's disease, and was assured that not one case had been observed.

The meeting adjourned to the lounging rooms at 10 o'clock, where refreshments were served.

The attendance was 329.

COUNCIL MEETING

At a meeting of the Council of the Academy of Medicine held Tuesday, October 9, 1917, at the University Club, the following members were present: the President, Dr. R. K. Updegraff, in the chair; Drs. Bernstein, Birge, Bruner, Follansbee, Klaus, Sawyer, Selzer, Tuckerman, Weir, Eddy and Lichty.

The minutes of the last meeting were read and approved.

Dr. Updegraff stated that in accordance with action at the general meeting of the profession of Cuyahoga County, called September 21st by the committee to conserve the practice of physicians in military service, the Trustees elected at that meeting had proceeded with the incorporation, and that this matter and a constitution for the organization were being handled by the firm of Squires, Saunders & Dempsey. Dr. Updegraff wished the Council members to know that, while the special committee of the Academy had finished its work in initiating this organization, the Trustees elected at the general meeting of the whole profession of Cuyahoga County were proceeding as rapidly as possible with the organization and incorporation of the Medical Relief Association.

On motion the following were elected to active membership in the Academy:

E. V. Bishop, M. D.; Anthony F. Ciegotura, M. D.; K. G. Cieslak, M. D.; M. R. Kellum, M. D.; Theron S. Jackson, M. D.

On motion the following was elected to non-resident membership:

D. W. Stevenson, M. D., Akron, Ohio.

On motion the names of the following applicants for active membership were ordered published:

W. E. Allyn, M. D.; Viola J. Erlanger, M. D.; Chas. H. Hay, M. D.; Wm. L. Holt, M. D.; Herman D. Pocock, M. D.

A communication from the Welfare Federation of Cleveland asking that the Academy notify them of its representatives to that body was read. On motion Dr. Wm. E. Bruner was reappointed, and Dr. W. H. Weir was chosen to take the place of Dr. H. L. Sanford, who is absent from the city because of service in France.

A communication was read from Dr. Franklin H. Hooper stating that there is discrimination against practitioners in general by the city authorities in the giving of treatments for rabies. On motion a committee was appointed by the chair to investigate the status of the matter and to report to the Council with recommendations. The chair appointed Drs. R. H. Birge, E. Klaus and C. W. Eddy.

On motion the Council moved to reimburse Dr. J. M. Ingersoll for the \$25.00 spent in connection with the special meeting held July 7th, demonstrating with moving pictures the methods of examining candidates for the Aviation Corps of the Army.

The chairman reported that Lieut. Col. E. B. Hardy declined to accept reimbursement for the expense of his trip to the city. On motion by Dr. Follansbee, the Secretary was directed to direct a special letter of appreciation to Col. Hardy.

On motion by Dr. J. P. Sawyer, seconded by R. H. Birge, the Council directed that if the Trustees of the Medical Library Association agree, a service flag showing a star for every medical man in the county in military service be displayed from the Medical Library Building.

Councillor M. J. Lichty called attention to several matters and requested the Council to consider the desirability of a district meeting to be held some time during the winter. After discussion, the chair appointed Drs. M. J. Lichty, J. P. Sawyer and G. E. Follansbee to report upon the feasibility of such a meeting, considering the additional burdens already being thrown upon the medical men of the city by draft and other war activities.

Dr. M. J. Lichty called attention to the fact that in spite of the presence of small-pox in the city and the vaccinating of school children, the large shops and mills were not being properly taken care of in this matter. On motion the Secretary was directed to communicate with the Health Department upon this question.

On motion the Secretary was directed to send to Dr. Geo. H. Watson's family an expression of the Academy's appreciation of his work and the loss in him of an untiring worker for the good of the profession and the public at large.

BOOK REVIEWS

Text Book of Ophthalmology. By Hofrat Ernst Fuchs, Professor of Ophthalmology in the University of Vienna. An Authorized Translation from the Twelfth German Edition, by Alexander Duane, M. D., Surgeon Emeritus, Knapp Memorial Hospital, New York. Fifth Edition, Completely Revised and Reset, with Numerous Additions Specially Supplied by the Author, and Otherwise Much Enlarged. J. B. Lippincott Company, Philadelphia and London. Price, \$7.00.

No new German edition of this work has been issued and none is contemplated, yet Hofrat Fuchs gave his permission for the insertion in this new American edition of such additions as in the translator's judgment

seemed desirable, and also himself supplied the notes of many additions and changes. These, therefore, as well as the many alterations made by the translator, are not contained in any German edition. In former editions many pages of remarks in fine print were appended to chapters or major divisions. These the translator has split into shorter sections and placed in juxtaposition to that portion of the text with which they are related, while some of the more important items have been transferred bodily to the text. The author's rich experience and wide knowledge have enabled him to write a work which for twenty-seven years has remained a model of its kind. The labors of the translator have often been most favorably criticized. There is no lack of those qualities of smoothness and clearness of style the absence of which mars many translations. The rearrangement of the work by the translator bears the approval of the distinguished author, and greatly enhances the value of an already most valuable work

R. B. M.

Manual of the Diseases of the Eye for Students and General Practitioners. By Charles H. May, M. D., Director and Visiting Surgeon, Eye Service, Bellevue Hospital, New York; Attending Ophthalmic Surgeon to the Mt. Sinai Hospital, New York; Formerly Chief of Clinic and Instructor in Ophthalmology, College of Physicians and Surgeons, Medical Department, Columbia University, New York. Ninth Edition, Revised. William Wood & Company, New York. Price, \$2.50 net.

There is but little change in the ninth edition of this Manual, the illustrations being the same as those of the eighth edition, while but very few alterations have been made in the arrangement of the text. In discussing the operations performed for the relief of glaucoma, the author concludes that notwithstanding the conceded usefulness of those procedures which have for their object the production of a filtering cicatrix in the sclera, this group embracing Elliot's scleral trephining operation, iridectomy still remains the most popular operation for glaucoma. The Manual is to the highest degree complete, and that it enjoys great popularity is evidenced by the fact that the eighth edition, appearing in 1914, was reprinted in 1916, and again in 1917.

R. B. M.

The Fundus Oculi of Birds, Especially as Viewed by the Ophthalmoscope. A Study in Comparative Anatomy and Physiology. By Casey Albert Wood, M. D., Chicago, Ill. The Lakeside Press, Chicago. Price, \$15.00.

The author's principal object in publishing this Atlas was to supply descriptions and illustrations of the intraocular appearances of the eyes of birds, as well as to furnish instructions for the making of the requisite examinations in order that ophthalmologists and zoologists might be assisted in furthering this study. The eyes of some representative of practically every order of birds have been considered in this Atlas, the collection of material for which was begun by the author ten years ago. The colored illustrations of fundi are most excellent, they having been executed by Mr. Arthur W. Head, of London.

R. B. M.

The Mayo Clinic, Rochester, Minn. 1,916 Collected Papers of The Mayo Clinic, Rochester, Minn. Octavo of 1,014 pages, 411 illustrations. W. B. Saunders Company, Philadelphia and London, 1917. Cloth, \$6.50 net; Half Morocco, \$8.50 net.

The Collected Papers of the Mayo Clinic for 1916 is much more than a mere collection of surgical reprints. There are articles which describe and illustrate the Mayo technic in operations on the lungs, gall bladder, colon, rectum, spleen, kidney, prostate and spine. There are other articles which cannot fail to interest any medical man, whether he is general practitioner, internist, surgeon or laboratory worker. Among these articles of

general medical interest are the papers on syphilis and tuberculosis of the stomach, the active constituent of the thyroid, heart-block, epidemic poliomyelitis and Cholesterol Retention as a Factor in Cell Proliferation. The short papers, such as those on the Value of Public Health Service and the Status of the Graduate Degree in Medicine, should prove of interest even to many who are outside the medical profession.

L. A. P.

Diseases of the Stomach. By Max Einhorn, M. D. Sixth Edition. Wm. Wood & Co., New York, 1917. Price, \$4.00 net.

The present volume is the sixth edition of Einhorn's well-known book. The number of editions proves that the work must have some merits. The book has 552 pages of text and 126 are devoted to anatomy and physiology and to methods of examination. The article on X-ray examination of the stomach is inadequate, considering the great advance of our knowledge in this department. Only 18 pages are devoted to diet. The section on gastric ulcer is also sadly lacking in most of the wonderful work done in the X-ray diagnosis of this condition. The last chapter deals with the condition of the stomach in diseases of other organs. In writing on the influence of pulmonary tuberculosis the author only considers the loss of appetite in well advanced cases of the disease. How much more important is the fact that many cases complaining of "indigestion" are cases of tuberculosis. The whole work seems to the writer to show that there is really no good work on diseases of the stomach and that aside from ulcer and cancer there is not much left that is really gastric disease.

H. C. K.

The Practical Medicine Series, Vol. V, Pediatrics. Edited by Isaac A. Abt and A. Levison. **Orthopedic Surgery.** Edited by John Ridlon and Chas. A. Parker. The Year Book Publishers, Chicago. Price, \$1.35.

Only the section on pediatrics has been reviewed. The advances of the past year in this field have not been great. There has been a vast amount of literature produced dealing with poliomyelitis. The editors of this little book have selected and presented the best of these articles. Most of the work is taken up with the subjects of infant feeding and gastro-intestinal diseases. It is of interest to note the number of men advocating the use of boiled milk and to read the statements that it is not a factor in the production of rickets and scurvy. These little books are always good and the present volume contains a good abstract of the worth-while pediatric literature of the year.

M. C. K.

The Prescription, Therapeutically, Pharmaceutically, Grammatically and Historically Considered. By Otto A. Wall, Ph. G., M. D.; Professor of Materia Medica, Pharmacognosy and Botany in the St. Louis College of Pharmacy, etc. Fourth Revised Edition. C. V. Mosby Company, St. Louis, 1917. Price, \$2.50.

This is the fourth edition of this work, and is devoted wholly to the consideration of the prescription in its various relations. It is a concise and suggestive little volume of about 275 pages, and covers quite completely the field which the title implies. Examples are given of prescriptions in both the English and metric systems and the subject is presented under the heads of general considerations, weights and measures, language, extemporaneous prescriptions, and the history of the prescription. An appendix explaining the origin of the sign Rx closes the book. The work contains some judicious advice on the art of prescribing, and will prove a practical guide to both student and physician.

J. B. McG.

Impotency, Sterility and Artificial Impregnation. By Frank P. Davis, M. D. C. V. Mosby Co., St. Louis, 1917. Price, \$1.25.

This little volume of some 125 pages states in an interesting way the influence of smell, sight and sound on the sex instinct. That this instinct is

influenced by these means is not original; however, to one interested in the subject the volume gives a short, valuable review.

It is unfortunate that in places the construction is poor and that numerous typographical errors are found.

In the light of recent medical knowledge one will be compelled to take issue with the author on some of his statements. For instance, "An excessive secretion from the Bartholinian glands and the uterus greatly weakens the woman, and is followed by conditions similar to those found in men." Also, it would probably be found difficult to confirm the statement, "The children of tobacco smokers are dull and backward. They do not readily reach the higher grades, and a very small per cent complete the high school course."

The author's vehement criticism of co-educational schools as "producers of sexual crimes and destroyers of virtue" would seem to be materially overdrawn.

Considering sterility, some rudimentary factors are given, which are explained must exist before fertilization is possible. So much valuable data has recently accumulated that it would seem wise to revise the chapter on this subject and perhaps omit the quotation of Winfield, "that Sol. hypophosphitis comp. U. S. P. without sugar, continued for four or five weeks, has always been followed by pregnancy when given in sterility." Such a statement, if true, might warrant an investigation by the pharmacists of the American Medical Association as to the contents of the above mentioned compound, as well as the interrogation of Winfield, as to whether fertile individuals were ever so affected by similar medication. W. D. F.

Handbook of Gynecology. By Henry Foster Lewis, A. B., M. D., and Henry Alfred de Roulet, B. Sc., M. S., M. D. C. V. Mosby, St. Louis, 1917. Price, \$4.00.

This volume is rather conveniently arranged in twenty-four chapters, which are subdivided, as well as the important names appearing in heavier type than the rest. The majority of the important gynecological conditions are discussed, and as thoroughly as could be expected in so brief a text. The work is well up to date, though there are some additions which would be found valuable.

The illustrations, of which there are quite a number, are fairly satisfactory, although the original ones are inferior to those taken from other texts.

The volume should be found of interest, especially to students beginning the subject. W. D. F.

ACKNOWLEDGMENTS

Kirkes' Handbook of Physiology. Revised and Rewritten by Charles Wilson Greene, A. M., Ph. D., Professor of Physiology and Pharmacology, University of Missouri. Ninth American Revision. With Five Hundred and Nine Illustrations, Including Many in Colors. William Wood & Company. New York, 1917. Price, \$3.75.

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LETTERS FROM CLEVELAND PHYSICIANS IN SERVICE ABROAD

May 27, 1917.

Extracts from Letters from Captain Henry L. Sanford, Cleveland, with U. S. Red Cross Base Hospital No. 4, British Expeditionary Forces—Somewhere in France.* Here we are safe and sound and about ready to go to work. The twenty days since we left have been more like a Cook's tour than going to war, especially the last few days. We left Blackpool on Thursday, as we expected, but what we had not expected was to leave there at two o'clock in the morning, march to the station in the pouring rain and then sit up the rest of the night in coaches. We changed cars at 5:30 in the morning, just as we were having a nap, and snatched a cup of muddy water called coffee. They only gave us one little lump of sugar, and when I asked for another, the waitress said, "Oh, you baby," and passed on in great scorn.

After other changes we got to a port on the South of England, where we were to take ship for France. The ride down on the train was very beautiful, the country is so green and the fields so neatly cared for with even hedge-rows, many of them in blossom with some flower I didn't know and many lilacs and wistarias in bloom.

While we were waiting on the dock to embark, we saw several thousand soldiers of various kinds, also on the dock embarking for France in other boats. There was a great interchange of conversation between our men and the English. There is no doubt about their being glad to see us, and as the first American troupes they have seen they examined us minutely from head to foot, and wanted to know all about things and when the rest were coming.

We finally got aboard our boat for France, and found that she was a small hospital ship which had just brought over some convalescents to England that day. They were very much surprised to know that we were going back with them, as they did not know there were any Americans about. They maintain the most extraordinary secrecy about our movements, and even the English officer who officially conducted us over did not know himself from what port we were to embark, or on what boat we would sail. He simply put us on board the train, the train took us to the port and the embarkation officer put us aboard the hospital ship.

Before going aboard, our drum corps played various contingents of British onto their ships, and there was a great deal of cheering between the

*For the past two months Captain Sanford has been serving at one of the Casualty Clearing Stations, taking the place of Major Lower who has returned to the Base Hospital.

two nations. We finally got started on this small but exceedingly fast ship (which by the way, used to belong to Russia) and sat down to our first real meal in twenty-four hours, as we had subsisted in the meantime on many cups of muddy coffee, ginger snaps and fruit. Immediately after supper we went below decks, everyone put on his life belt, and all lights were extinguished. We were not overjoyed to find that we were crossing the widest part of the channel, but we found the next morning that we had been heavily convoyed. We slept in the hospital bunks in the hottest place I ever tried to go to sleep in, absolutely without light or air, until at 3:30 in the morning a steward came in and told us we were safe and opened the ports, and we took off our clothes and got some sleep.

We lay at anchor in the mouth of one of France's largest rivers until 10 o'clock, waiting for the tide and a pilot. Then we started up to our destination, some hundred miles up the winding river, but much less in a straight line. That trip up the river in the warm May sunlight will always remain in my memory as one of the most lovely things I ever did. Beautiful hills on both sides, old castles and chateaux on their tops, quaint French villages every mile or two, coming down to the water's edge, and a constant stream of vessels of all nations passing in both directions. The English captain of our hospital ship was tremendously proud of carrying the first Americans, and he photographed groups of us in every conceivable position. He had us put up our American flags at the bow of the ship, and a large flag at the mast. It was surprising how quickly everybody seemed to grasp the fact, and all the steamers and boats blew their whistles and saluted, and people all the way along came running down to the shore, shouting and cheering and waving American flags. When we came to a village the news seemed to spread instantly, and people poured out into the streets, mostly women and children and old men, cheering and shouting "Vive l'Amerique," to which we shouted back, "Vive la France." We kept our fife and drum corps playing almost constantly for hours, until finally they were exhausted and merely cheered. It was really the most touching and thrilling experience.

About evening we arrived at our port of debarkation, a city of considerable size, where we got a most enthusiastic welcome. We marched through the city to the outskirts, and then took motor lorries to the hospital, which is some miles out in the hills. The hospital has 1,500 beds in huts and tents, besides administrative buildings, nurses' quarters, officers' mess room and quarters, all occupying several acres of ground up on the hills in a beautiful location both for health and scenery. There are several other general hospitals and convalescent camps in the vicinity.

June 13.

It is now 4:30 in the afternoon and I have been working every minute since 8 this morning. I am going over to dine tonight with the officers at one of the other hospitals, and incidentally see a lot of wounded German prisoners, officers and men who were picked up after the drive at Messines. If, after I get home from there, I find a new lot of wounded in, we will work until we are through. Many of the men who come in wounded after a big drive haven't slept for two or three days and nights, and all they want is to be let alone, and thank the Lord they are in a bed for the first time in weeks or months, so unless they are urgent, we let them eat and sleep first. The result of three years' experience has taught these English surgeons a great deal about system, and things go through with great speed and little friction. There is no day or night nor days of the week in this business; you simply do what you have to do and work until it is finished. It consequently happens that life is very irregular and you can never plan your work. Sometimes you are very busy, and then again there is almost nothing on hand. We American surgeons have been under training, learning the system at the

hands of a few English officers left to make the transfer to us gradually. In another two weeks or so we expect to be in full charge and have the say of everything.

The English have been most kind, cordial and hospitable. There is not the shadow of a doubt that they are very glad that we are in the scrap, because they are fed up with war. That does not mean that they are not going to see it through, calmly and thoroughly, but they don't mind having help. Inevitably we have been watching the English and have been amused at some of their ways and methods, and doubtless they have been equally surprised at some of our system, but there has been no friction. From the minute we got to England the man in the street has been unaccountably hospitable and cordial to us. We have been wine and dined and pampered until we began to wonder whether all our preconceived notions of the stolidity and reserve of the average Briton were all wrong. After I got to know some of the English officers pretty well, I asked them frankly about it, and the answer they gave was, "Well, you know, we were bally fools about a lot of things before the war." In other words, the war has broken caste prejudices and conventions and they are glad to see us over here. The whole sentiment may well be summed up by the expression of a bystander in Liverpool when we marched to the station. We had the English flag carried beside the Stars and Stripes as a compliment, and seeing the English flag the crowd was for a moment confused, until it dawned on one chap who we were. He said, "By Gawd, it's the Yankees at last," and then the cheering started.

Our patients here are all English Tommies and they are without doubt the most absolutely wonderful set of men I ever handled. I haven't seen a streak of yellow in one of them. They are perfectly disciplined and instead of complaining, you have to pry their troubles out of them. When I make my morning rounds and ask them how they are feeling, they give me a bright smile and say, "Champion," or "Not too bad," or "In the pink," no matter if they are peppered with wounds and running a high fever. If you have to operate on them, you never have to ask their permission and they never think of asking you what you are going to do. It is all a part of the army discipline and so different from surgery in civil life, where after you have finally got the patient's permission to operate, you have to convince Aunt Jennie and Uncle Silas that it is necessary, and talk with the neighbor whose wife had the same thing done and came out badly. After all that is arranged, ten to one they will back out on the morning of the operation, and you will have to look pleasant when you had planned to pay your tailor for last winter's suit with the fee. In my opinion this wonderful behavior on the part of these soldiers is a powerful argument for military training in the United States. It would cut down the number of young motor car bandits and thieves, and put a sense of discipline and the fear of God into a lot of our young men of foreign parentage who are now filling our police courts.

Of course, one reason these wounded are so thankful to get to us is that sleeping in a clean bed with clean sheets and having a bath is something they have not had in some time. Some of them have not had any sleep for days and nights, and occasionally we get a man who has lain out wounded in a shell hole for periods varying from one to four days, often without food or water and perfectly helpless. It is no secret that the Germans fire on the Red Cross, and that the recovery of the wounded has to be done at night. For a man to get out of that environment and get food and sleep is pretty near Heaven in itself, and so they are the most grateful patients I ever saw. They have wonderful stories to tell, but they are very modest and you have to work hard to get them started.

We have learned lots of new expressions over here. Nobody ever speaks of England as home—it is always "Blighty," which means home, and which is a corruption of a word in India meaning home. The great song you hear here is "Take Me Back to Dear Old Blighty," and when we make

our rounds in the hospital and mark a man's temperature chart with a big "B," it means that he is well enough to travel and is going home. The patients soon learn all the symbols we use, and watch us like cats to see what we put on the charts. The look that comes over their faces when they see the "B" is something that money couldn't buy.

The Australians have an expression which everybody uses. It appears that Australia is overrun with rabbits, which are the farmer's pest, so when they want to wish you luck, they say, "I hope your beastly rabbit dies."

A letter from an Englishman telling what they think of us, would probably be even more interesting than what we think of them. They are quietly sizing us up, and they undoubtedly find us unconventional and surprising. However, I can only hope that we will prove to be what a Major of the Royal Engineers called us the other night. They had us over at their mess for dinner in a neighboring camp, and under a mild tide of alcoholic inspiration, I rose to the occasion enough to say that the "R. E." on their insignia did not stand for Royal Engineers, but for "Royal Entertainers." The English Major came back at me quick as a flash and said, "Thanks, awfully, old man, but do you know what U. S. stands for? Universally satisfactory."

I trust we will be.

June 17.

You ask me for a typical day's program. Today it happens that I am the O. D., which means the "Officer of the Day," taken in rotation by the Captains and Lieutenants. I relieved the previous officer of the day at 9 A. M. at the Commandant's office, and will be on duty twenty-four hours and will be in turn relieved at 9 tomorrow morning. During the day the O. D. has certain fixed duties, such as inspecting the kitchens and food at noon and at night, receiving and sending out all convoys of patients, assigning them to wards and tents, being present at roll call at 6:30 A. M., visiting the guard-house twice a day, inspecting the police, and at some time between midnight and reveille making a complete tour of the hospital, to examine all fire apparatus and to see if the police and night telephone operators are on the job, and answering all emergency calls for twenty-four hours. As you do all this besides your regular work, you can see that today I am fairly busy. This only comes around once in twenty days to each officer, so it is not so bad. The O. D. can't leave the grounds, but must leave word at all times where he can be found, and must wear full uniform, sword and belt and walking stick, by which insignia he can be recognized.

An ordinary day's work consists of 7:30 breakfast, of porridge, soft eggs, and jam and toast, with rotten poor coffee, then get on your wards and see how things are going, list the necessary operations, get into the operating room and do them when your turn comes, in order of rank. That takes until 1 o'clock on an ordinary day, but after big convoys come in we may be operating steadily for twenty-four hours or more, day and night. Afternoons we do dressings, write records or take a nap, according to pressure of work. Evenings we play bridge, go to walk or to bed. It is either a case of very busy or not busy at all, and you can't tell six hours ahead what is going to happen. We have lunch at 1 P. M. and dinner at 7. The food is good, only very irregular. Some of our meals are fine when the beef is good and we have fresh vegetables. At other times we have bully beef and beans. "Bully beef" is canned corned beef, and a stock source of humor in the army. Every once in a while we eat up all our sugar, so we have none at all for a day or two, or we can't get oatmeal or jam or butter, but most of the time we have plenty and there is no cause to complain. We have greatly appreciated candy sent us because everyone has a great craving for sugar, the allowance is so small.

As far as entertainment goes, I happen to be chairman of our Welfare Committee, and after training a drum and fife corps which can now play three tunes and make a Hell of a lot of noise with considerable rhythm, I

am now training an orchestra and making a noise like Muck. We have bought the instruments of the orchestra the English recruited from their enlisted men. We got twelve pieces. We are rehearsing three times a week and will soon appear in public. I am conducting temporarily and will turn it over to an enlisted man as soon as they get going well enough. After the first rehearsal I could easily have burst into tears. I couldn't understand why everything sounded so sour. You know how an orchestra sounds when it intentionally makes discords. That's the way we were, only much worse. I finally discovered that one instrument, the trombone, was soldered into a position from which the pitch could not be altered. Apparently the fellow who played on it last got it where he was suited and thought he would keep it there. Also the cornet in some past time had sprung a leak, which had been mended with wax, some of which had gone further than it should have, setting up a violent bronchitis in the inwards of same. Also the piano was out of tune. The instruments which could be tuned were being handled by such amateurs that being in tune didn't help matters much. The whole effect was the saddest ever. But at last we have got things really going, at least it is not so frightfully sour and I now have some hopes.

We also have a base ball team among the enlisted men to play with other units, and we are going to have a football team in the fall. We have also issued an international tennis challenge in singles and doubles, as we have our home city champion among the enlisted and one or two others who are very good.

June 23.

Today I have been getting up a concert and building a tennis court—strange proceedings for a surgeon! It is very funny how they do things here. I was reckoning up how much the preparation of a court would cost, and raising the money, when I was told in visiting other hospitals to ask about the cost of their courts, that it was a disgrace to spend any money on a court. It appears that, on application, gangs of laborers may be secured (prisoners) for grading and leveling purposes, that certain places are glad to furnish cinders if you will only take them away, which you do in motor lorries secured from other obliging persons, that rollers can be borrowed and that if you only know how to do it and where to go, the British Army is a very wonderful institution and fully as resourceful as a department store. All the heavy labor on the court in the way of excavating and rolling is being done by British prisoners, not prisoners of war, but chaps who have been drunk or absent from parade, or overstayed their leave. They get varying sentences of fifteen to ninety days in a prison camp, and get either No. 1 or No. 2, or "Hard Labor." The last is the hardest; they are not allowed to speak to each other and have to carry out all commands at the double, which means the double quick. No. 1 means they work six hours a day, and are "tied up" from 5 to 7 in the evening. Their hands are fastened behind them to a post, and their ankles are fastened to the same post with six inches of loose rope so that they can move a little. No. 2 is the same as No. 1, except that they are not "tied up." When you want a job done and you haven't any of your own men to do it, you just call up the prison camp and ask for as many men as you want for as many days, and up they come with guards and do your work for you. You never know whether you are going to get Boche prisoners of war or British, as they use both for all kinds of work. These British prisoners wear their usual uniform and unless you were told you would never know that they were not an ordinary fatigue party. There are some very interesting men in our lot; some of them have been in two years and wounded twice, as you can tell by the narrow strip of gold braid sewn vertically on the upper part of the cuff or sleeve and called the "wound stripe." They are perfectly cheerful about their position and are well fed, only looking forward to working out their time and getting back to their detachment.

I have to laugh when you ask me about surgical dressings and whether it is necessary to have each sponge look like a piece of fancy work. Of course, we are operating under English conditions and are issued English Red Cross supplies just as we get British rations. Their gauze comes sterilized in strips about eight inches wide and wound into rolls several yards long, off which we cut as much or as little as we want for the purpose at hand. No one ever thinks of corners or ravelled edges or anything else, only speed and efficiency. It is not only foolish but a criminal loss of time to insist that women shall sit around and make dressings in the ridiculous way you women were forced to do in America when I left, when you could do so much more and have the dressings equally useful with less exactitude. It is all a part of a lot of red tape, insisted on, doubtless, by some well-meaning but frightfully mistaken executives, whose orderly minds cannot visualize this situation and this need. There is doubtless need for some uniformity in dressings as to size and shape, but the conditions which were exacted in America are ridiculous. Someone may say in reply to my argument, "What does S. know about our system or what we need," and the answer to that is that S. is one of the men on the job and using the dressings, and we know what we want to work with, certainly not with beautifully made pieces of fancy work. They tell us over here that England went through the same spasm, but they have bravely recovered. If we are later moved behind American troops, we will probably begin to use these daintily made supplies, and ten to one the chances are that the first thing we may have to do with a sponge or dressing will be to unfold it as quickly as possible to fit the special wound or tract to be covered. Then where does all your trouble count?

They have some funny things up in the front line. "O. C." is the abbreviation for "Officer in command." They have much trouble with rats and lice, and so they have an "O. C. Lice," and an "O. C. Rats," meaning an officer especially detailed to devise means to get rid of rats and another to take care of lice. It must be funny to write home and tell your friends that you are the official rat-catcher or the louse specialist, but really there is not a bit of humor in the job itself. It is terribly important to keep lice away from the men, because if they get bitten and get to scratching, they rub dirt in inevitably and soon start a crop of infections and get sent to the hospital. Every man off the front line means one less fighting man. Rats spread all kinds of infections, and they catch them with poisoned bread, which they nail on a board and color green to keep the soldiers from eating it.

June 29.

Everybody is complaining very bitterly about mail, and some of the men much more so than I have any right to. Some have not had one word from home yet. Some boat must have been sunk and the censors kept it out of the papers.

If I should tell you what I have been doing today you would have some difficulty in making out just what my business is over here. I did work all the morning on the wards until noon, then this afternoon I arranged for a tennis match between two of our fellows and some officers at another post; then arranged four concert numbers for a concert at a Y. M. C. A. convalescent camp hut, consisting of a dance duet, recitation, baritone solo and a chalk talk. Then I went down to see how well my men did their stunts, came home and rehearsed the orchestra for an hour and a half, made rounds on the wards, ate dinner and now am writing this letter.

We are making great preparations for the Fourth of July. I went all over the city yesterday and finally found some Japanese lanterns with which we are going to decorate for the dance in the evening. In the afternoon we are going down to the hospital where the St. Louis unit is located for tea and tennis, and in the evening they are coming to our dance. If it rains or we get a rush of work, it will all be off.

Today is an easy day, no fresh patients, and we took the opportunity of doing a general surgical housecleaning, and getting our records up to date. We use our easy times to catch up with. I got all done by noon but had to stay on the job, as Major L. is away and so I am Chief of the Surgical Service. The surgical end of it is simple compared to the multitude of documents to sign, conferences to attend, rounds of the entire hospital to make, etc. It is a busy job, and tremendously interesting.

I have also inherited the job of O. C. Garden, as they call it, officer in charge of gardens, I have just been out in the garden picking sweet peas, bachelor buttons and gypsophilum for the table. My mess servant arranges flowers so well that all I do is to pick them and hand them all over to him. Our garden here is simply an instance of the fact that amidst all the terrible suffering we see here, there has been a very determined effort to take one's mind off it by supplying pleasant surroundings and entertainment. Around our mess quarters and sleeping quarters there are many beautiful flower beds planted and planned by the English surgeons and taken care of by convalescent patients. All through the 150 acres which comprise the hospital grounds, are many bright flower beds and much planting, although three years ago it was all a forest.

Every Sunday afternoon at four, the nurses give a tea, to which many of the officers go. I am always there in a front seat, largely because I get something to eat. I am always hungry here, not because I don't eat, I am sure, as I have not eaten as much in years, but the air here is wonderful and everyone is tanned and looks well. Many of the British officers also go with great regularity. I usually spend most of my time in the kitchen talking to the portly French cook lady of the nurses' mess hall. She is a most superior and well educated woman, who speaks most excellent French. How in the world she ever got into the cook business I don't know. I always talk French every chance I get, and as she has lived in England some years she can help out when we get stuck in the conversation. She is quite enthusiastic about my accent, but I am afraid she is a terrible jollier. She gets French newspapers and makes me read aloud to her, which I do like a child at school.

Work has suddenly dropped off and we have had a very busy social week. Last Tuesday we had a big family dinner, our commanding officer has been made Lieutenant-Colonel and we celebrated that and then we gave a loving cup to the English colonel who has been commandant here, and is now leaving and who has been exceptionally nice and diplomatic in receiving us and showing us what to do. The other English officers were given mementoes, and as the whole thing came as a complete surprise to them, we were more than pleased as they were completely taken off their feet.

July 7.

The Fourth we worked in the morning and then in the afternoon went down to the St. Louis unit for a lawn party, and in the evening they came to us for a dance. We were all decorated up with American flags, and the lanterns were quite festive.

Thursday evening we went to an original musical comedy given by the convalescent camp, where there are about 2,000 patients and much professional talent. The show was perfectly remarkable. They gave it in a big building called the church hall, which holds about 1,000 people and it was packed. They had some very good jokes on Americans. One in especial about our dance on the 4th. The story goes that the reason that dancing is forbidden in the English army is that an influential daughter of a commander in chief, once went to a dance where she was so badly snubbed that she got dancing forbidden forthwith. At any rate they won't let their nurses or nor the V. A. D.'s dance (the voluntary aid division). So this verse was written about our dance, in which it went on to say that England could well learn a lesson from us, and cut out some of her own red tape. The scene coming home from the play was most extraordinary, and made a

profound impression on me. We had been sitting for two hours in this great barracks of a theater, listening to a good show, just as one might go to the theater at home, and as the house was dark, except for the lights on the stage, one didn't especially notice the uniforms in the audience. From this peaceful scene, we suddenly stepped out into the brilliant summer moonlit night, not a cloud in the sky. Several huge beams of light were darting about overhead, search lights. The low boom of guns could be heard, and the picturesque uniforms of the officers, with the varying dresses of the different nationalities of nursing sisters, some with long flowing white linen head dresses, gray capes with red edges; our nurses with blue capes and the red cross, the whole thing seemed such an extraordinary combination that you had to pinch yourself to realize that you were in France on the edge of the war, instead of at a moving picture plant, where all those things might have been brought together to make a film.

Most of the stages for the shows here are merely open air platforms with canvas strung behind, though the footlight are quite elaborate owing to the ingenuity of the Royal Engineers. The bands are all pick-up affairs, but there is sure to be someone who plays on every kind of instrument in every organization, and the music they produce is very satisfactory. One of the conductors is an English Symphony violin soloist, and so it goes all the way through. Many of the concerts are really most remarkable things as far as excellence goes, and when I tell you that one organization near us has in its personnel 52 professional stars, you can understand that they can put on a different show for many weeks in succession.

All this sounds rather frivolous, but heaven knows that it isn't, but a most salutary and necessary diversion from this grim business that occupies most of our waking hours and steals many of our sleeping hours.

This afternoon we walked down to a camp of Indian Sikhs, about a quarter of a mile from us, and watched their sports, the chief of which was wrestling. These fellows are very fine looking; they are tall, coffee colored and have straight black hair wound up into a topknot on their heads, and covered with a khaki-colored turban. They usually wear long silky black moustaches and many of them have square cut beards. For the wrestling they formed a great square and squatted down on their knees about it (at least the spectators did), and we were honored with chairs. The wrestlers had nothing on but a breech clout, and their bodies were beautifully developed. They are very skillful in their wrestling, but very gentle in a way. They don't resort to any of the dirty tricks one sees in America, like pulling hair or biting, or gouging the eyes of an opponent. It is a sort of catch-as-catch-can wrestling, and we watched match after match of elimination trials, until finally one magnificent specimen of a man, with a silky beard, very white teeth and superb physique, was pronounced the champion of the regiment, and we later learned that he was 52 years old but he beat them all.

When I tell you that in the next field an English cricket match was going on, that the Scottish Y. M. C. A. was close by and a little further on the Roman Catholic military church, you will appreciate how all nations and religions are jumbled up together and apparently getting along with the greatest good will.

None of our American troops have come to this base as yet, and I doubt if they will. While I would be glad to see them, it is in a way much more interesting to work for the wounded of other nations.

We have struck a very lazy season. The wards are not a quarter full and we are practically having a summer vacation at a beautiful summer resort. Before you get this, however, we may be operating day and night, and that is the way it goes, a constant succession of feast and famine, according to the movements on the line. Meantime it is lucky, as I am very busy building the tennis court and training my orchestra. I don't know what I would do with myself in this slack period if I didn't have all these outside things to do, but as it is I am busy as a box of snakes all day long.

I bought a piano the other day for the officers' mess. I found that I could get a very good one for 650 francs second-hand, and I raised the money among the men. If we are moved we can sell it easily and get at least part of our money back, as there is a great demand for them. A piano as good at home would cost easily twice as much. They won't rent anything but the most spavined instruments, because they get abused so in the camps and can never be fixed. Part of this is due to weather conditions and the great amount of dampness, so the only way we could get any kind of an instrument was to buy one.

Shortly after we got here, a Major from the British war office arrived with several official photographers, two cameras and a moving picture machine and took our pictures, still and moving, the officers, the band, the nurses and the enlisted men, in groups and then the whole unit marched by the moving picture machine. These were for the war office permanent records and so our faces are now immortalized. One would think it a rather pleasant and easy job to go about taking pictures but it is far from it, as they say they put these photographers right up in the line to take pictures of charges and battles and that many of them have been killed.

Tomorrow I am going in the afternoon to a base ball game between our men and the Canadians and in the evening to a boxing tournament gotten up by boxers in the various regiments. War is certainly hell!

July 21.

I started a letter three days ago and directed the envelope and that is as far as I got. The deluge struck us then, and when I tell you I haven't had my clothes off in 48 hours even to take a bath, you can realize that we have been rather busy. There is really nothing to write about except work. They have been firing them at us at the rate of 150 or so a day, and the necessary clerical red tape, to say nothing of the surgery, is very great.

We got 18 extra American nurses today. We were short-handed and sent for more and they have just got here. They come from all over the United States, but none at all from home. They all look very tired, as they have been more than a month getting here. Their coming will release the last of the British nurses here who have stayed on, and they are having a fancy dress party tonight to celebrate their departure. They are all dressed in soldiers' uniforms and represent a "Convoy of wounded to England." They are very funny and where in the world they got all their costumes I can't imagine. Several of them have Scotch kilts and one is an Indian Sikh, with turban and everything else that goes with it.

We got in 150 new patients this morning and more coming tonight. It is tremendously interesting and absorbing, but it takes it out of you, because you have to think quick and hard, and can't put anything off till tomorrow, because tomorrow may be worse than today. The remarkable thing about the hospital is its low mortality rate. Out of the thousands with wounds and illnesses that go through here, less than one in a hundred dies. Of course many of them die before they get to us, but even then one would expect a much higher rate, and it is very rare for them to die after they leave us, because being a base hospital, we are supposed to see them through to a fairly safe condition before we evacuate them through to England.

A little incident occurred the other night which appealed to me as most symbolic of our part in this war. After severe wounds that are near big blood vessels we often get what we call secondary hemorrhages eight or ten days afterwards, from the fact that the vessel wall not punctured at first, becomes eroded from the wound suppuration and suddenly there is a big hemorrhage. The other night about midnight I got a hurry call for one, and before I got there the chap was just about gone. We sent a call down to the enlisted men's barracks for a volunteer to give his blood, and out of several one young fellow was selected. We put about a pint of blood into

the English Tommy, and now of course he is going to get well. A lot of English officers were standing around watching proceedings, many of whom had never seen a transfusion before. When the thing was over, they all went up to our enlisted man and shook him by the hand and thanked him. Our chap had been put in bed beside the other fellow he had given his blood to, and was very calm about the whole thing. One of the English surgeons had tears in his eyes as he turned to me and said, "By God, that chap of yours acted like a Briton!" I asked him how he expected the boy to act, but secretly I was very proud of him. That our men should be saving English lives by giving their blood seemed to me a very beautiful and tangible demonstration of America helping out. The sequel to the story is as I have said, that the Tommy is getting well. Our boy stayed in bed for forty-eight hours until he made a little new blood and then went back to work. A most beautiful friendship has sprung up between the two, and they call each other "Brother," as well they may.

H. L. S.

July 4, 1917.

Letters from Captain Walter C. Hill, with Red Cross Base Hospital No. 4, Lakeside Unit—Somewhere in France. The past week has been rather quiet, but when a big push starts near here, we shall have plenty of work for the X-Ray laboratory, for this is a hospital more than twice the size our Unit was organized for. We probably shall get some more nurses and enlisted men; at least they have been asked for. If we do not get them, the British nurses and men who are still here will probably remain.

They surely have been showing speed at home in war preparations. The arrival of our troops in France last week was quite a surprise to us.

* * * * *

The X-Ray room is in the same hut as the operating room, so I am conveniently located to help the surgeons in finding the foreign bodies, most of which are very small fragments of shrapnel which are rather hard to find in the muscles.

I have never seen such changeable weather as there is here, and never so much rain. One day it will be so hot that you nearly expire, then the next so cold it goes clear through you. The dampness or humidity makes the heat and cold much more perceptible. * * *

I wish I might tell you in detail about everything, but we have to censor everything pretty closely. This is certainly a scientific war, and the Royal Engineers ("R. E.'s"—everything is initials over here), are doing their bit to win the war, and their officers that I have met are a fine lot.

Every soldier is a specialist. When they go "over the top" (that is up out of the trench toward the German trench), they have bombers, bayonet men, supply men with more bombs (for the bombs, or what we may call hand-grenades, are used very extensively in attack). One bomb in a bunch of Huns will put them all hors de combat. Then last come what the Tommies call the "Moppers up" to clean up those who are not out of business and might shoot the front men in the back, as frequently happens. Before the soldiers are sent to the front they are trained on a duplicate trench system like one at the front, so they do everything automatically when they reach the front. They all get very nonchalant after being at the front but a short time. After a little experience, if the Huns give them time to learn, they can tell by the sound of a shell about where it will hit. The green ones are the ones who are most often killed. The young assistant who was in the X-ray laboratory when I came, a very nice young chap, got his, four hours after he reached the front. Two of the doctors, not attached to any unit, who came over on the boat with us, have gone up to the front, but have not seen a big "show" (as the British call it), yet, but they will probably see plenty before the summer is over. The fatalities at the Messines Ridge fight were very few, and we had no very bad cases here. The enormous mines there did awful execution among the Germans, a few hundred of

whom came to a hospital near here. As one very talkative U. S. doctor who came over here with us and was assigned to that hospital, said: "It was a waste of ammunition, for they had seven wounds where one of the kind was enough to put them out of active business. The mines just seemed to lift the earth up en masse, and it did not break until it started to fall; a most weird sight. One could quite picture the men still firing from the top after they had started their trip to the moon."

Probably we shall get an opportunity to do some work at the front at one of the Casualty Clearing Stations, for it has been arranged to send up teams (surgeon, nurse, anesthetist and orderly), when a big show is to be pulled. I think I shall be able to convince them that the X-Ray men at the front will need some help. It gets in your blood over here, and you feel that you ought to do your little share of what the other chap has to do—but don't buy the flowers just yet.

The British officers I have met, most of whom are doctors, are as fine a lot as I have ever come across, and they surely have put themselves out to be exceedingly nice to us. They come from England, Ireland, Scotland, Australia, Canada, South Africa, India and other places, and you can imagine what an extremely interesting lot they are.

The St. Louis Unit has taken over a hospital not very far from us, so we see some of them occasionally. I saw Percy Brown with the Harvard Unit in London the day before we left there. * * *

Major Hoover visited a camp of Germans a few days ago and had great fun. He told Fritz that the U. S. was sending over two millions of men to march to Berlin, and Fritz said, "Yes, just as we marched to Paris." But I think from all I hear that they are on the run, and are losing their morale. However, it is not going to be any jolly Fourth of July party for us. It is going to be serious business and the people at home will have to learn that by reading the casualty lists in the newspapers a little later. We are all pleased that some of our soldiers have arrived in France, for I think it has bucked up the French a lot. I do hope some more drastic action is taken with German sympathizers and spies at home. It is not fair to those who come across here to fight and to do their bit to be so easy on those spies.

I hope all my letters will reach you. I have written a bunch. Perhaps some you sent to me delight the mermaids.

I shall write you often, but there will not be much news.

July 25th, 1917.

We are having busy times at present and I suppose they will continue. I very seldom have any variation from my routine of localizing fragments of shrapnel, and occasionally a shrapnel ball, and also examining fractures from gunshot and shrapnel. I have not yet seen a rifle bullet. Dr. Crile purchased a little telephone apparatus which I operate. When a bullet, or rather fragment of shrapnel, is within a half inch or an inch of the skin surface, it will give a buzzing of the telephone, when the finger is moved over the spot on the skin under which the foreign body lies. The finder can be put on the finger under a sterile glove, so it can be inserted into the wound and locate the foreign body in the tissues. It has really been of great assistance. We do not see many bad cases here except occasional bad infections, which are pretty virulent, the worst and most fatal being hip joints. I have seen a few cases of gas infection. These have to be taken care of very quickly, as soon as discovered, for it is remarkable how rapidly the infection extends. The only thing to do is to dissect out entirely the muscle, or muscles, infected, for the infection appears to be limited by the muscle sheath. We see many cases which have been gassed. Fritz is using all kinds of gas these days, and quantities of gas shells, so one always has his gas mask to slip on in the regulation ten seconds, and some patients have told me that they have had to wear a mask for several hours. It is arranged

now so the officers do not remain here at the Base all the time, but operating teams (surgeon, anesthetist nurse and orderly) are sent from time to time to the Casualty Clearing Stations located several miles behind the lines, to work for one, two or three weeks. At present Drs. Crile, Hoover, Lower, Shawan, Eisenbrey, Blankenhorn, anesthetists, nurses and orderlies have gone up, which has made it particularly busy here for us. It will probably be some time before I am sent up, for I can hardly pass off as a surgeon. I really am anxious to go up there where there is a little gamble, and I think nearly everyone in the Unit feels that he should go up there and do his bit and take his chances. The Casualty Clearing Stations are within gunfire of the big guns, so it is not quite so healthy as back here. I really believe that before the war is over (which will be some time) many of us will go right up to the front.

Here is a copy of a part of a letter written back to us by one of the unattached doctors who came over on the same ship with us, and then over here until they were detailed. I think this will interest you.

"I've been up the line for about ten days and have had four days of intense shell fire at an Advanced Dressing Station. There were batteries on all sides, and an important road near by, and Fritz threw thousands of 5.9 and 8 inch shells (at times as many as fifteen landed within a few hundred yards, in a minute), and there was rarely any let-up except just after daybreak. The Advanced Dressing Station was about a mile behind the front trenches and consisted of several "elephant-back" bomb-proofs erected in what remained of a farm house. These bomb-proofs are safe except for direct hits, and there have so far been no casualties. It's a miserable life, for there is too little to do to keep one busy, and if you value your life you don't leave the shelter except when it is absolutely necessary. The days are spent reading week-old newspapers, playing cards and wondering when a shell is coming straight through and blow you into Kingdom Come!

"Four days are quite enough for a start and I was more than glad (as is every one else by the way) to get back a bit. We are now just in shell range and very comfortable, for Fritz can't see his target when he sends us his compliments in the form of large armor-piercing shells."

* * * * *

As soon as there is a lull in the work, a number of us are going to be "gassed," so as to be ready to go up front any time we are ordered. This is required before one goes up front. One has to put on a gas mask, then go through first a room filled with lacrymating gas, which tests the mask, then through a room containing poison gas. In this way, one becomes accustomed to breathing through the mask, and also gains confidence in the protection afforded by the mask.

Our soldiers will have a lot to learn about this kind of war after they get over here before they can do any fighting, and our engineers will have to learn about constructing the proper system of trenches, dugouts, etc. Some of the bomb-proof dugouts are twenty-five feet underground, and I believe the Germans go even deeper. Sometimes I think what a fool-thing this war is, with the best engineers working on the most efficient means of protection, and at the same time the most efficient means of killing the other chap.

I don't imagine people at home are really awake yet about this war, and what a long affair, and what a serious thing it is going to be. We are going to do *our good big* share in this war before it is through, in money, men and supplies, and we shall lose a lot of men, but I am sure most of those who come over here will feel as we do after they have been over a while. They will all feel that they want to get into the real business and do their share and take their chances with Fritz, who still has a considerable amount of fight in his system, I am sorry to say. If we can only hurry up a little more and send some of the grafters and cheap politicians over here for cannon fodder, and on with the areoplanes, we will shorten the war mate-

rially. The slower we are in getting into it right, the more men we are going to lose. It seems quite probable that it is going to be up to Great Britain and the U. S. to finish this war. The British are wonders, and I only hope we shall be as good as they are.

Drs. Finney and Baer (Major and Captain respectively in the Johns Hopkins Unit, which is with the U. S. forces) have been spending a few days with us, and appear much pleased with what they have seen of the British, and somewhat cheered up after having spent all their time before this with the French. And further I think they have learned a lot which will be of value to them.

I like the British officers more and more, the more I see of them, for they are a fine lot, and there are none braver in the world. W. C. H.

Letter from Captain Richard Dexter, with Red Cross Base Hospital No. 4, Lakeside Unit—Somewhere in France. As you all know, the Unit has charge of a British Hospital and is running it in good style. It will please those who are interested to know that the Unit tackled a rather difficult problem, not only difficult from a medical point of view, but also from a diplomatic one, and has made good. We have all settled into our uniforms and look as if we belong in them, and into our jobs as well. You and others may be interested to know what the members of the Club who are with the Unit are doing.

Major Crile, Major Lower and Captain Shupe are at the Casualty Clearing Stations, which are nearer the front. Working with them are other officers from this hospital, nurses and orderlies. Major Hoover has been granted leave of absence. Hill is working like a beaver at the X-Ray work, which is a very important part of the surgical work of a war hospital, as you can readily imagine. Morrill has charge of two very active surgical wards. Sanford is acting head of the Surgical Division, and acting Director of the Unit in Crile's absence. He is doing great work, and the service is running in a highly efficient and absolutely smooth manner. Major Hoover made a great impression during his term here, and during a short period of work nearer the line; through his great clinical ability he was able to make some very valuable additions to the knowledge of certain phases of war injuries which were obscure. In Hoover's absence I am in charge of the Medical Division of the Hospital and Acting Assistant Director. I have charge of the executive end of the Medical Department in addition to two wards totalling 80 beds, and when I am busy I am busy with a large B.

It is all great work, and everyone is glad to be doing it, first because it is each man's bit, and secondly, because it is a wonderful experience. We are comfortably housed in huts with a pleasant mess, including dining room and living room. The officers' quarters center about a little garden that would make you and * * * green with envy, and just in front is a patch of vegetables that would make you weep. Our food is excellent, simple and plentiful.

The work itself is of great interest and totally different from civil practice. In the first place, we have implicit trust from our patients, and absolute obedience to our orders. The days of malpractice suits, and disregard of our suggestions for the welfare of our people have gone for us, and it makes for a singleness of purpose in problems medical, that is indeed refreshing. Then, too, the question of fees does not exist. We are working for people and our living does not rise or fall by our endeavors or lack thereof. It is more like an academic job for that reason. Medically there is but one drawback, and that is that we cannot follow our patients all through their illness. We must keep them moving. But we are all very happy in our work, all in a frightful state of good health, and it seems impossible to overwork us. Most sincerely yours.

R. D.

Letter from Dr. S. W. Kelley, Ambulance des Allies, Paris, Now With Major R. E. Skeel, Establishing a New American Red Cross Hospital.* I want to say something concerning getting into the war-game. Every physician, like every citizen, should get into it somewhere; and let us have it done with as promptly as possible, and well done. It does not follow that everyone should come to France. Some can be more useful in the home territory; however, everyone should exert himself distinctly and forcefully in the great task that is before the country. Those physicians who come to France should do so in connection with the army of the American Red Cross (now a part of the army), or have a definite place and function upon arriving here. This does not mean, of course, that all should come with large and indivisible hospital units or surgical units. The authorities here often find it useful to divide organizations or use individuals instead of entire teams. As the war goes on and as the United States is coming into the field, a movement toward more close and complete organization is developing, so that now there is less opportunity than formerly for desultory engagement in military surgical positions. It is well to bring along one's entire outfit, in the way of clothing and personal belongings, for everything is expensive here, and often sizes and varieties are limited, while shopping involves great loss of time. Living is expensive here, and food is not had in abundance nor in variety. I do not mean that anybody is starving, for that is not the case. However, portions served, quality, kinds and prices are not as they were before the war. This is essentially marked outside the war zone. In the war zone there are not the restrictions on meat and sugar that are in force outside of it, but then, one cannot go there just to live there. One must show good reasons for his being there on war business, in order to gain admittance, and it is a difficult matter to obtain the necessary papers. Whoever comes should arrange his affairs for staying a long time. Nothing is done in a hurry here. A little formality that one would think could easily be gone through with in perhaps three hours is likely to consume three weeks, and may be as long as three months. As many as can should lay their plans to remain in the service for at least—and I don't wish to frighten you—two years. At the present rate of progress, it does not appear to me that the war can end soon, unless there is some great unlooked-for development such as was the revolution in Russia. I have seen how slow progress is in trench warfare. When I was exploring pulverized towns or flew over the trench-scarred battlefield of two years ago in observation balloons, or was listening to the thunder of the guns along the battle front of today. The position of the terrain has changed only a few kilometers in two years. All this brings one to a realization of the strength and stubborn resistance of the enemy. As for starving him out, it is not easy to starve an industrious and frugal people in a fertile country. I have been astonished at the large amount of land under cultivation, and the splendid condition of the crops right up to within a short distance of the firing lines. The peasants—the majority of them women—but as strong as men—go right on tilling the soil, and they scarcely pause in their labors, to watch an aircraft fight above their heads; in fact they seem to be stimulated rather than frightened by the sound of cannonading. And I think it likely that the same condition prevails on the German side of the lines. Finishing this war is not a pleasantly easy job ahead, and we may as well settle into the traces for a long pull. The sooner enough of us get ourselves into the war harness and are trained for the pull, the sooner it will be all over. For the young man who can afford the time (because he is young) it will be a wonderful experience, combining as it does, foreign travel and language, military, medical and surgical observation among

*We take the liberty of printing this interesting letter from Dr. Kelley, which appeared in October number of the *American Journal of Clinical Medicine*.

the soldiers of many nations, and the consciousness that he is taking the part of a man in the greatest war of all history, serving his country and mankind in a land devoted to liberty, equality, fraternity.

Paris, France.

S. W. KELLEY.

MEDICAL NEWS

Dr. F. W. Vincent, who has been in the Government service of the Philippine Islands as chief of the Baguio Hospital for the past eight years, has resigned from the service and entered private practice in Manila. Address, 312 Roxas Bldg., Manila, P. I.

Lieut. H. Roswell Wahl, M. R. C., formerly Associate Pathologist of Lakeside Hospital, Cleveland, Ohio, is now stationed at Fort Leavenworth, Kansas. Lieut. Wahl will address the Jackson County Medical Society, Kansas City, Mo., on November 27th on "Lobar Pneumonia and the Use of Serum in Its Treatment." Lieut. Wahl has just completed certain work at the Rockefeller Institute upon the subject of this essay. There are many prominent research workers who are now upon active duty in Department Laboratories of the Army. Both Lieut. Kaplan of the Neurological Institute at New York, an authority upon the Serology of Syphilis, and Lieut.-Col. Charles F. Craig have delivered scholarly addresses before the Jackson County Medical Society.

To Officers of the Medical Reserve Corps, U. S. Army Inactive List—Word received from the Surgeon General of the U. S. Army, conveys the information to officers of the Medical Reserve Corps of the United States Army, inactive list, that assignment to active duty may be delayed, and that they are advised to continue their civilian activities, pending receipt of orders. They will be given at least 15 days' notice when services are required.

Research Work of the Red Cross in France. Announcement has been made by the Red Cross that its War Council has appropriated \$100,000 for medical research work in France. This action follows a report from Major Murphy, Red Cross Commissioner to Europe, who cabled the following from Paris to the National Headquarters at Washington:

"An extraordinary opportunity presents itself here for medical research work. We have, serving with various American units, some of the ablest doctors and surgeons in the United States. Many of these men are already conducting courses of investigation which, if carried to successful conclusions, will result in the discovery of treatments and methods of operation which will be of great use not only in this war, but, possibly, for years afterwards. To carry on their work they need certain special laboratory equipment, suitable buildings, and animals for experimental purposes. At present, equipment and personnel cannot be obtained through ordinary government sources without delay, which makes this source of supply quite impracticable."

Co-operation with Major Murphy in his plans is pledged by Dr. George W. Crile of Cleveland, who headed the first Red Cross unit to reach France; Dr. Lambert, Dr. J. A. Blake, Colonels Ireland and Bradley of General Pershing's staff and various American experts on the ground.—*Science*.

Guide for Formulating a Milk Ordinance. Office of Information, United States Department of Agriculture, Washington, D. C. To assist communities in making their milk supply safe, the United States Department of Agriculture has issued a "Guide for Formulating a Milk Ordinance." This document, Department Bulletin 585, suggests a form of ordinance designed

to protect the community against fraud and disease and to insure cleanliness in the production and handling of milk. Health officers and physicians interested in improving milk supplies may obtain it free on application to the department.

Announcement! At about the time that the *Medical Review of Reviews* was founded, Professor Dillon Brown, of New York, established a semi-monthly journal devoted to the diseases of children, called *Pediatrics*. The opening article was by A. Jacobi and the leading physicians of the city, among them J. Lewis Smith, Reginald H. Sayre and William H. Park contributed to its pages. Latterly it has been edited by William Edward Fitch, but Mr. Fitch has recently been appointed a major in the United States Army, and we have acquired his blue-pencil and subscription list.

Pediatrics will no longer appear as a separate publication, but has been incorporated with the *Medical Review of Reviews*. Beginning with January, however, the *Medical Review of Reviews* will contain a special department devoted to *Pediatrics*. This feature is but one of the improvements scheduled for the coming year. Important Symposia are now in progress, the editor will contribute a second series of *Pathfinders in Medicine*, a Staff of Associate Editors is being formed, and thus the *Medical Review of Reviews*, in entering upon its twenty-fourth annual volume, promises to be more serviceable to the profession than ever before.

Venereal Disease Chief Army Plague. Health conditions among the American soldiers in France are shown in a table prepared at Surgeon General Gorgas' office today, based upon reports for the week ending November 9. Following is the estimate of the number of cases of principal diseases per thousand men per year:

Pneumonia, 16.6; dysentery, 2; malaria, 1; venereal disease, 181.5; typhoid, 0; para-typhoid, 0; measles, 21.7; meningitis, 1; scarlet fever, 1.9.

The non-effective rate per thousand for November 12, which is the number of men per thousand who on the day reported were excused from duty for any disposition whatever, was 31.6.

Gas Company Helps Loan—East Ohio a Big Subscriber for Liberty Bonds. One of the largest subscriptions made by any corporation in the second Liberty Loan campaign in the Fourth Federal Reserve District was that of the East Ohio Gas Company. Following a \$200,000 purchase of bonds during the second week of the campaign, it was announced on the last day that \$800,000 more had been taken out of the latter amount. Cleveland was allotted \$650,000; Akron and Youngstown, \$50,000 each; Canton, \$25,000, and smaller cities, including Uhrichsville, Dennison, Kent, Ravenna, Warren, Wooster and Barberton, the remainder. The management of the company got into phone communication Saturday morning with its local managers in the various places and distributed the subscription with a view to helping each local committee reach its quota.

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A MANUAL OF CLINICAL LABORATORY METHODS.

BY CLYDE L. CUMMER, Ph. B., M. D.

CLEVELAND.

Assistant Professor of Clinical Pathology, the School of Medicine of Western Reserve University: Serologist on the Visting Staff of the Medical Division of the Cleveland City Hospital.

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INTRODUCTORY.

This outline of clinical laboratory methods has been prepared for the use of students in the course of Clinical Pathology in the School of Medicine of Western Reserve University and for the house officers of the Cleveland City Hospital. Its object has been to present to the students trustworthy and simple methods for laboratory diagnosis, and to furnish to the house staff at the City Hospital a standard technic which would ensure uniform results, as far as personal equation permits.

In offering it the author feels that he is adding a small pamphlet of little value in a field already well covered by numerous texts, large and small. His only excuse is that this is a natural outgrowth from a similar guide which had been issued in mimeographed form in two editions and for which there appeared to be a definite demand. This demand doubtless arises from two factors. One is that a student is confused in consulting a text book by the multiplicity of methods offered, many of which we must admit are obsolete or for some reason are unsuitable for general application. He quite naturally desires to know which of several methods is preferable and limitations of equipment make a simple method necessary. A second factor is that certain texts are in some instances none too explicit in the minuteness of their directions. We have aimed to indicate, at least, the desired method for each test, usually giving only the one which experience has shown us to be the best, and to give it in minute detail, since this is merely a practical guide, a laboratory "cook-book," as it were.

We, therefore, trust that readers will understand and pardon the more or less dogmatic manner in which its pages are written, and to remember that it was prepared primarily for the use of students and internes. It may be that it will commend itself to practitioners who have the time and disposition to make their own laboratory examinations.

Nothing of great importance can be claimed as original. Texts and monographs have been freely consulted, and lack of space has prevented adequate acknowledgment of all sources. When it was felt that a subject could not be properly presented because of the limitation of space, reference has been made to larger texts.

The writer desires to express his sense of deep obligation to Dr. Roy G. Pearce for reading the proof and for his valuable suggestions. He also wishes to acknowledge with gratitude the helpful criticisms of the preceding edition of this manual made by Dr. Howard T. Karsner.

CHAPTER ONE.

Examination of Urine.

1. *Routine Examination.*

A routine examination of the urine should include the following:

1. Color.
2. Appearance.
3. Reaction.
4. Specific gravity.
5. Qualitative test for albumin.
6. Qualitative test for sugar.
7. Microscopical examination of sediment.

In case quantitative determinations are desired, a 24-hour specimen should be obtained.

2. *Daily Amount.*

It should be remembered that a knowledge of the amount excreted in 24 hours is of the greatest importance in the clinical management of the various forms of nephritis, in cardiac decompensation, and in diabetes mellitus. This simple observation, judiciously interpreted, may give vastly greater information than laborious quantitative determinations of various ingredients.

3. *Method of Procedure.*

In order to conserve a specimen when only a small quantity is furnished, a definite line of procedure should be followed. It is possible to make a complete quantitative examination with 50 c.c. or even less if economy is exercised. First, take the specific gravity, then start a portion in the centrifuge, next take the reaction, perform the test for albumin and sugar, and finally examine the sediment microscopically. It is better to know one or two tests thoroughly and to know their limitations than to have a superficial acquaintance with many methods. The following are recommended because of their simplicity and their reliability.

4. *Appearance of Specimen.*

This should give a clue to special tests. A dark brown color suggests the presence of bile, reddish or chocolate colored urine, the desirability of chemical and microscopical tests for blood, and so forth. Turbidity may be due to (1) Bacteria, in which case no clearing will be seen on heating or by the addition of acid. (2) Phosphates, which dissolve on the addition of acids. (3) Urates, which may be white or red. In the latter instance the color may deceive the patient into thinking that blood is present, but turbidity disappears promptly on heating. (4) Pus, which may be centrifugalized to the bottom of the tube but dissolves neither with heat nor with acid and is, of course, readily recognized on microscopical examination.

5. *Preservation of Specimens.*

If possible the specimen should be examined shortly after it has been voided. When prompt examination is impossible and it is necessary to keep the specimen, a preservative should be added, such as 2 drops of 40 per cent formalin to the liter of urine. In making chemical analysis, however, it should be remembered that formalin may reduce Fehling's solution.

6. *Specific Gravity.*

The float should rest in the cylinder of urine without touching the sides of the cylinder. The reading should be taken from the bottom of the meniscus.

If foam is bothersome, a drop or so of ether may be added to cause its subsidence.

7. *Qualitative Tests for Protein Bodies.*

The following tests react with both albumin and globulin, which we do not attempt to consider separately in clinical work. These tests are preferred

because of their simplicity, and because of the ease with which the reagents can be obtained. The test with heat and acetic acid is the more delicate, sufficiently so for all clinical purposes. We do not feel that more delicate tests are either necessary or desirable, since the extremely faint traces of albumin which they reveal are of doubtful clinical significance.

8. *Heat and Acetic Acid Test.*

Fill a clean test-tube almost to the top with clear urine. If turbid the urine should be filtered, or the supernatant clear urine in the centrifuge tube may be used. When clear urine can be obtained in neither way, a small amount of Kieselguhr should be shaken up with the urine, which may then be filtered. Heat the top layer to a boiling point. If a cloud occurs, add a few drops of 5 per cent Acetic Acid. Stronger acid or an excess of acid should be avoided, since either will cause the albumin to go into solution. Heat again. If the cloudiness remains after the addition of acid, it is due to albumin or nucleo-protein, but if it disappears, it is due to phosphates. The reason for the appearance of a precipitate of phosphates when previously clear urines are heated is CO_2 is liberated by heating, and the reaction of the urine is made more alkaline.

9. *Heller's Nitric Acid Ring Test.*

Put about 5 c.c. of urine in the bottom of a clean test-tube and allow a layer of nitric acid (C.P.) to run under the urine from a pipette. This should be done slowly and carefully so that there will be distinct layering of the two fluids and so that mixing does not occur. A white layer at the junction indicates the presence of albumin. A similar layer may be given by certain drugs.

10. *Record of Albumin Findings.*

In recording findings, it is wise to adopt a fixed terminology for the sake of comparison. The following is suggested. It is based on the density of the cloud obtained with the heat and acetic acid test.

FPT=faintest possible trace, meaning the least cloud which is visible when the tube is held against a dark background.

FT=faint trace. The cloud is slight but readily visible.

T=trace. There is a distinct cloud, which is sufficiently opaque to render the tube not transparent.

HT=heavy trace. The cloud is dense and shows flakes. The albumin is present in a measurable quantity.

QUALITATIVE TESTS FOR SUGAR

11. *Benedict's Test.*

This is to be preferred on account of its delicacy and the permanency of the reagent.

In a test-tube place 5 c.c. of the reagent and add not more than 8 to 10 drops of the urine. Boil the mixture thoroughly and allow to cool spontaneously. If glucose is present, the entire body of the solution will show a precipitate, ranging from green to red in color, according to sugar content of the urine. In the absence of sugar, the solution remains quite clear or shows only a faint bluish turbidity.

The formula for Benedict's solution is:

Copper sulphate	17.3 grams.
Sodium citrate	173.0 grams.
Sodium carbonate (anhydrous).....	100.0 grams.
Distilled water, to make one liter.	

The sodium citrate and the sodium carbonate are dissolved by heating with 600 c.c. of water, after which the resulting solution is filtered through a folded filtrate into a graduate and the total volume is made up to 850 c.c.

with water. The copper sulphate is dissolved separately in 100 c.c. of water, and the bulk of this is then made up to 150 c.c. The sodium carbonate and citrate solution is now poured into a large beaker and the copper sulphate is added slowly with continual stirring.

12. *Fehling's Test.*

Fehling's solution should be prepared fresh daily, by mixing equal quantities of solutions No. 1 and No. 2. After the solution has been prepared, boil a little in a test tube to make sure that no reduction occurs.

To about 5 c.c. of hot Fehling's solution add a few drops of urine, boil, and keep adding urine, a few drops at a time, until there are equal quantities of urine and Fehling's solution. Sugar is indicated by yellow or red precipitate. The appearance of a greenish color means nothing. In case of doubt, allow the tube to stand. If sugar is present, a distinct precipitate will settle.

The formulae for the two Fehling's solutions are as follows:

Copper sulphate solution:

Copper sulphate, 34.65 grams.

Distilled water, to make 500 c.c. ..

Alkaline tartrate solution:

Potassium hydroxide 125 grams.

Rochelle salts 173 grams.

Water, to make 500 c.c.

The solutions are kept in separate bottles, and small quantities are mixed in equal quantities as needed.

13. *Fermentation Test.*

A doubtful result with either of the foregoing reduction tests should be confirmed by a fermentation test, since substances other than glucose, such as uric acid, formalin, creatinin, chloroform, and simple aldehydes, may give a slight reaction.

Two fermentation tubes are employed. In one the urine to be examined is placed after it has been thoroughly mixed with about one-sixteenth of a fresh cake of compressed yeast. The second tube is filled with normal urine, similarly mixed with an equal amount of yeast. The two tubes are kept at room temperature or may be placed in the incubator.

The formation of gas in the upright denotes the presence of glucose, providing the normal urine shows no gas formation.

In the absence of fermentation tubes, ordinary test-tubes may be employed, filling the tube with the urine and yeast mixture, and then setting it upright, with the opening down immersed in a beaker of the same urine.

MICROSCOPICAL EXAMINATION.

14. The urine should be centrifugalized. If a centrifuge is not accessible, it may be allowed to stand in a vessel with a conical bottom.

Press the pipette firmly at one end with dry forefinger and lower the other end to the bottom of the containing vessel. Rotating the pipette between thumb and forefinger will allow a little of the sediment to enter the pipette. Withdraw the pipette and allow the contents to escape on to a glass slide. This is now ready for examination under the microscope.

Darken the field by lowering the Abbe condenser and by almost completely closing the iris diaphragm just beneath the stage. First, examine the slide without a coverslip, using the low power, to hunt for casts and crystals. Then put on a coverslip and with the high power examine for leucocytes, red blood-cells, epithelium and bacteria. A well darkened field is absolutely essential, if hyaline casts are to be found, on account of their slight refractility.

The constituents to be examined for may be divided as follows:

1. Organized elements, including casts, cylindroids, leucocytes or "pus-cells," red blood cells or shadows, spermatozoa, mucous cylindroids, epithelial cells, bacteria, yeasts, animal parasites.

2. Unorganized elements, including uric acid crystals, sodium urate (amorphous and crystalline), ammonium urate, hippuric acid, ammonium magnesium phosphate (triple phosphate) crystals, amorphous phosphates, calcium phosphate crystals, calcium oxalate crystals, calcium carbonate crystals, cystin, leucin, and tyrosin.

Casts.—Casts, especially hyaline casts, do not possess great refractility

15. *Regarding the Search for Organized Elements.*

and will be readily overlooked unless the field is well darkened. No significance should be attached to the absence of casts in alkaline urine, since they dissolve readily in an alkaline medium. Various types of casts are noted, the classification being based on morphology. When the cast is filled with granules it is referred to as a finely or coarsely granular cast according to the size of the granules. Then we have blood casts, pus (or leucocyte) casts, epithelial casts, fatty casts, depending upon the morphological element which has been incorporated in the hyaline matrix of the cast itself. These are of significance since they indicate that the particular morphological element has been incorporated in the kidney tubule itself and, therefore, has been "shed," as it were, in this place, and not lower in the urinary tract. Waxy casts are light yellow, have sharply defined outline, and are much more refractile. In reporting upon the presence of casts, the following terminology is advised:

A few casts.—Less than five seen in an entire slide when studied with the low power lens.

Occasional casts.—An average of less than three to each field of the *low* power lens.

Numerous casts.—An average of more than three casts to each field of the *low* power lens.

Cylindroids.—While cylindroids resemble casts in structure, they are usually longer and taper at one end.

Mucous cylindroids.—These are long tapering bodies which are thinner than either casts or cylindroids.

Leucocytes.—There should be no difficulty about recognizing leucocytes when the high power lens is used. If there is doubt, a drop of dilute acetic acid may be run under the coverslip. This will accentuate the leucocytes, making them appear darker, and will hemolyze red blood cells. Normally, few leucocytes are seen.

Red blood cells.—Generally speaking they are never seen in normal urine. They may be distinguished from leucocytes with the higher power of the microscope, and with the aid of acetic acid, as described above. The corpuscles may appear as "shadows," the hemoglobin having been laked.

The following terminology may be used in describing the number of leucocytes or erythrocytes in urinary specimens:

Few.—Less than 1 or 2 in each field of the *high* power lens.

Occasional.—From 2 to 10 in each field of the *high* power lens.

Numerous.—Over 10 in each field of the *high* power lens.

Epithelial cells.—Are normally seen in small numbers. In female urines, which have been voided, the normal number is large. These are pavement epithelial cells from the vagina. Epithelial cells should be divided into three classes:

a. Large flat cells, the form most frequently seen, may come from ureters, bladder, or vagina.

b. Round cells, rather larger than leucocytes with large, clearly defined nuclei. These come from the uriniferous tubules and from deeper layers of the mucous membrane of other portions of the urinary tract.

c. Caudate cells, with distinctly tail-like prolongation of the cell body, usually coming from the renal pelvis or the neck of the bladder.

It should be remembered that the cell forms are not definitely characteristic of any one locality in the genito-urinary tract, but their identification may be of assistance when considered with the other findings.

Yeast cells.—These are occasionally seen, especially in urines which have been kept some time in receptacles which had not been thoroughly cleaned.

Bacteria.—Before drawing conclusions from urinary bacteria, one should satisfy himself that the specimen has been voided recently into a clean container, and that the organisms are not due to contamination.

UNORGANIZED ELEMENTS.

16. The following table by Sahli is useful in identifying the principal inorganic sediments.

- I. Readily soluble upon heating: Urates.
- II. Insoluble or soluble only with difficulty upon heating.
 - A. Soluble in acetic acid.
 1. Phosphates (no effervescence).
 2. Calcium carbonate (with evolution of gas).
 3. Ammonium urate (with microscopic precipitate of uric acid).
 - B. Insoluble in acetic acid.
 1. Soluble in hydrochloric acid; the last three also soluble in ammonia.
 - a. Calcium oxalate.
 - b. Leucin, tyrosin, xanthin, cystin.
 2. Insoluble in hydrochloric acid.
 - a. Uric acid.
 - b. Calcium sulphate.

A helpful classification is that of Wood, who divides the sediments according to the reaction of the urine in which they occur.

- I. Sediments in acid urine:
 - A. Amorphous urates (quadrates of Na and K).
 - B. Uric acid.
 - C. Calcium oxalate.
 - D. Cystin.
 - E. Leucin.
 - F. Tyrosin.
 - G. Bilirubin or hematoidin.
 - H. Hippuric acid.
- II. Sediments in neutral or amphoteric urine.

In addition to those above, neutral calcium phosphate may be found and ammonium-magnesium phosphate rarely.
- III. Sediments in alkaline urine.
 - A. Amorphous phosphates (tricalcium and trimagnesium phosphates).
 - B. Calcium carbonate.
 - C. Ammonium urate (spheres or "thorn apples").
 - D. Triple phosphates or ammonium-magnesium phosphate.

It might be said that the clinical significance of the presence of various forms of crystals is not great. Their identification, however, completes the description. Triple and amorphous phosphates are the rule in alkaline urines and their presence always suggests the possibility of decomposition. Calcium oxalate crystals are observed after the ingestion of tomatoes, asparagus, rhubarb, oranges, etc., and are also seen in diabetes mellitus, etc. Uric acid crystals are seen in a highly concentrated, acid urine. Leucin and tyrosin are found in acute yellow atrophy of the liver, in acute phosphorous poisoning, in cirrhosis of the liver, in cases of severe typhoid.

17. *Special Qualitative Tests.*

Indications for the performance of these tests will be afforded by the clinical indications, as well as by the laboratory data given briefly with certain of the procedures.

18. *Tests for Bile Pigments.*

Foam test.—Shake the urine in a bottle. A brownish yellow foam indicates the presence of bile. This test should not be accepted as final, but should be confirmed by one of those given below.

Gmelin's Test.—Under 5 c.c. of urine in a test-tube, run from a pipette 5 c.c. of concentrated nitric acid, carefully and slowly, as in Heller's test for albumin. If bile be present at the point of contact will appear rings of various colors, green, blue, violet and red.

Rosenbach's Modification of Gmelin's Test.—Filter 5 c.c. of urine through filter paper, unfold the paper, allow it to dry, and at the point which had been the tip of the cone apply with a glass rod a drop of concentrated nitric acid. If bile be present, there will appear concentric rings of various colors as described under Gmelin's test.

Trousseau's Test.—Under 5 c.c. of very dilute Tincture of Iodine (1 part of Tincture of Iodin plus 39 parts of 95 per cent alcohol) run with a pipette 5 c.c. of urine. Bile pigments will give a dark green ring at the junction of the liquids.

19. *Tests for Acetone.*

To be looked for when Fehling's test is positive.

In performing any of the tests for acetone, it is preferable to distil the urine, using either a retort or a flask fitted with a cork through which is passed a long piece of glass tubing. The urine is acidulated with 5 per cent acetic acid and distillation is allowed to proceed until about 1/3 of the original volume has been collected. To this add 5 drops of 10 per cent HCl and redistil. When it is not feasible to distil, undistilled urine may be employed.

Gunning's Iodoform Test.—To 5 c.c. of distillate add a few drops of Lugol's solution and enough ammonia to form a black precipitate. When the black precipitate appears, add a few more drops. Allow the tube to stand until a yellowish sediment appears, and examine this microscopically for iodoform crystals. These are six-sided plates and six-pointed stars. This test is the most satisfactory one proposed, since it is given by no other substances.

Legal's Test.—To 5 c.c. of distillate, add a few drops of a freshly prepared concentrated aqueous solution of sodium nitroprusside. Render the mixture alkaline with 10 per cent potassium hydroxide. Normally a red color appears. This is due to creatinin. Add an excess of glacial acetic acid and if acetone is present, the color will be intensified to almost a purple. If acetone is absent, a yellow color is seen.

20. *Diacetic Acid.*

To be looked for when Fehling's test is positive.

Gerhardt's Test.—To 5 c.c. of urine in a test-tube add 5 per cent aqueous solution of ferric chloride, drop by drop, as long as precipitation occurs. If a heavy precipitate of phosphates occurs, filter and to the filtrate add a few drops of the ferric chloride solution. A Bordeaux red color is produced by diacetic acid.

An apparently positive test should be controlled in the following way: Boil 5 c.c. of urine in a test-tube for about 3 minutes. Cool the tube and make the test described above with the boiled urine. Since diacetic acid is broken down by boiling to acetone, and since acetone does not give this test, the boiled urine should not give a Bordeaux red color.

21. *Indican.*

Obermayer's Test.—In a test-tube place about 10 c.c. each of clear urine and Obermayer's reagent (made by adding 2 gm. of ferric chloride to 1,000 c.c. hydrochloric acid), and add 5 c.c. of chloroform. Cork the tube and shake vigorously. If indican be present, the chloroform will take the color of indigo blue.

22. *Blood.*

Adler's Benzidine Reaction.—Acidify about 2 c.c. of urine with glacial acetic acid, add about 5 c.c. of saturated alcoholic solution of benzidine and about 5 c.c. of hydrogen peroxide. Mix. A green or prussian blue color indicates the presence of blood pigment.

The benzidine solution should be kept in a dark place, since it changes rapidly upon contact with light.

It is needless to say that a microscopical examination for red blood cells should be made.

23. *Nucleoprotein.*

To 10 c.c. of urine in a beaker add 3 volumes of water to prevent the precipitation of urates and to render reaction very strongly acid with acetic acid. Turbidity indicates the presence of nucleoproteid. Positive identification is difficult. If albumin is present, it should be removed by boiling and filtering the urine before testing it.

24. *"Bence-Jones Protein."*

Heat the urine gently, noting the temperature. If "Bence-Jones protein" is present, a turbidity may appear at as low a point as 40° C. It would be preferable to place the urine in a test-tube and to stand this erect in a beaker of water, holding a thermometer in the beaker of water and heating the beaker over a Bunsen flame. When the temperature rises to 60° C. flocculent precipitation forms. Now acidify the urine slightly with dilute acetic acid, and heat to 100° C. Most of the precipitate will disappear and will reappear upon cooling the urine.

25. *Diazo Reaction.*

Ehrlich's reagent should be freshly prepared by mixing one part of solution A with 50 parts of solution B. Equal quantities of this reagent and urine are placed in a test-tube and are thoroughly shaken. About 5 c.c. of each are taken. About 10 drops of ammonium hydroxide are now added quickly and the contents of the tube are again shaken. The test is regarded as positive if the fluid assumes a deep cherry red color, and the foam is distinctly pink. Normal urine results only in a brownish yellow color. A test should not be regarded as positive unless the foam is pink.

The formulae for the two solutions are:

A.	Sulphanilic acid	1
	Hydrochloric acid (conc.).....	50
	Water	1000.
B.	Sodium nitrite	1
	Water	200.

26. *Urobilin.*

Alkalinize 10 c.c. of urine and add 25 drops of 10 per cent zinc chloride. Allow to stand a few moments, filter off the phosphates, and add a few more drops of the zinc chloride solution. Hold the tube against a dark background and examine with a ray of strong light. An electric pocket flash-lamp will serve the purpose. A band of green in the fluid points to the presence of an excess of urobilin. This observation may be confirmed by spectroscopic examination, which shows an absorption band between the green and blue portions of the spectrum.

27. QUANTITATIVE DETERMINATIONS.

Caution.—It should be remembered that any quantitative determination has little value unless it is made with a 24-hour specimen, in order that the total daily output of a given substance may be determined.

28. *Albumin*

Esbach's Method.—An Esbach albuminometer tube is necessary. Introduce urine to the mark U, and then carefully add Esbach's reagent (10 gms. of picric acid and 20 gms. of citric acid dissolved in 1 liter of water) to the mark R. Cork the tube, invert gently about 10 times so that mixing may be thorough, and place the tube in a test-tube rack, where it should stand for 24 hours. Then the upper level of the precipitate may be read on the engraved scale, which gives the number of grams of protein per liter of urine. If the precipitate comes to the mark 2, there are 2 grams of protein per liter or 0.2 per cent.

The writer prefers this method to the use of Tsuchiya's reagent when urine is to be examined. It may be employed in the same way, however. The formula is: phosphotungstic acid, 1.5 grams; concentrated hydrochloric acid, 5 c.c.; alcohol, 95 c.c.

29. *Sugar.*

Fermentation Method.—This method is only approximately accurate, but has the advantage of simplicity. An Einhorn saccharometer is required. About 15 c.c. of urine are placed in a beaker and in it is ground up about $\frac{1}{16}$ of a cake of compressed yeast, using a glass-rod as a pestle. The resulting mixture is placed in a saccharometer tube. Care must be taken that there are no air bubbles at the top of graduated tube, which should be completely filled with urine. The tube is placed in a warm room or in the incubator, and at the end of 12 hours the percentage of sugar is read at the upper level of the fluid in the tube. A control tube should be set up with normal urine mixed with the same amount of yeast.

30. *Reduction Methods.*

The preference of the writer is for the method of Purdy. His reasons for this choice are, first, the sharp end-point, and second, the comparative ease with which the solution of copper sulphate may be prepared. At present it must be admitted that Benedict's method is distinctly a general favorite. The difficulty of recognizing the end-point sharply unless one has had much experience constitutes a real objection, as does the bother attendant upon the preparation of the solution. Both methods are given here.

31. *Purdy's Method.*

Measure 35 c.c. of Purdy's solution into an Erlenmyer flask of about 250 c.c. capacity, and add about 100 c.c. of distilled water. Charge a 25 c.c. burette, graduated in $\frac{1}{10}$ c.c.s., with the urine, allowing the urine to run out of the terminal until all the air in the terminal and rubber connections has been forced out. The Erlenmyer flask should be provided with a tight fitting rubber stopper, perforated with two holes. The glass terminal of the burette should be introduced through one hole, and through the other should be passed a piece of glass tubing about 8 inches long, which should be bent at right angles at a point a little above its emergence from the rubber stopper. This provides a vent to carry out the ammonia fumes. Mount the burette with attached Erlenmyer flask and fittings on the burette stand, supporting the flask suitably with the iron ring, protecting the bottom with wire gauze. With a Bunsen flame, bring the contents of the flask to the boiling point, and then *slowly* discharge urine from the burette until the blue color begins to fade; "then *still more slowly*, three to five seconds elapsing after each drop, until the blue color completely disappears and leaves the test-solution *transparent and colorless.*" This marks the end point. At least two determinations should be made, taking the average of the readings.

Calculation.—The amount of urine required to reduce 35 c.c. of the solution contains exactly 2 centigrammes (.02 grams) of sugar. The percentage can be determined in this way:

Let x = number of c.c. of urine required to effect reduction.

Then the percentage of sugar = $2/x$.

Example: 2 c.c. of urine are required to reach the end-point. $2 \div 2 = 1$ per cent.

Precautions.—Should the amount of sugar prove to exceed 3 or 4 per cent, it is well to repeat the manipulations with urine diluted 2 or 3 times with water. In this event the calculation should be corrected accordingly, dividing the number of c.c.s of urine required to effect reduction by 2 or 3, as the case may be, before employing the formula given above.

Preparation of Solution.—Purdy's solution is prepared as follows:

Pure cupric sulphate, 4.752 grammes.

Potassium hydroxid, 23.50 grammes.

Strong ammonia (U. S. P., sp. gr., 0.9), 350 cubic centimeters.

Glycerine, 38 cubic centimeters.

Distilled water, to 1,000 cubic centimeters (1 liter).

Prepare by dissolving the cupric sulphate and glycerine in 200 cubic centimeters of distilled water with the aid of gentle heat. In another 200 cubic centimeters of distilled water dissolve the potassium hydroxid. Mix the two solutions, and when cooled add the ammonia. Finally, with distilled water bring the volume of the whole to exactly 1,000 cubic centimeters (1 liter) in a volumetric flask.

32. *Benedict's Method.*

10 c.c. of urine are diluted in a measuring flask up to 100 c.c. with distilled water, and a burette is filled with the resulting mixture. In a porcelain evaporating dish (about 25 to 30 c.m. in diameter) is measured with a pipette 25 c.c. of Benedict's reagent, and 10 to 20 grams crystallized sodium carbonate are added. One-half this amount should be used if the anhydrous salt is employed. A little powdered pumice or talc is added, and the mixture is heated over a free flame until the carbonate has dissolved. Then the diluted urine is quickly run in until a chalk-white precipitate forms, when it is added drop by drop until the last trace of blue has gone. Throughout the titration the mixture must be kept boiling; if it becomes too concentrated, water may be added.

Calculation.—25 c.c. of Benedict's reagent are reduced by 50 mg. glucose. Therefore, the fluid used for titration contained 50 mg. of glucose. If the dilution of urine was made as prescribed (1+9) this formula may be employed for determining the percentage.

$50/x$ = percentage in original sample when x represents the number of c.c. of diluted urine required to reduce the stated amount of reagent.

Preparation of Benedict's Reagent:

Copper sulphate (crystallized), 18.0 grams.

Sodium carbonate (crystallized, one half the weight of the anhydrous salt may be used), 200.0 grams.

Sodium or potassium citrate, 200.0 grams.

Potassium thiocyanate, 125.0 grams.

Potassium ferrocyanide (5 per cent solution), 5.0 c.c.

Distilled water to make a total volume of 1000.0 c.c.

With the aid of heat dissolve the carbonate, citrate and thiocyanate in enough water to make about 800 c.c. of the mixture and filter if necessary. Dissolve the copper sulphate separately in about 100 c.c. of water and pour the solution slowly into the other liquid, with constant stirring. Add the ferrocyanide solution, cool and dilute to exactly 1 liter. Of the various constituents, the copper salt only need be weighed with exactness. Twenty-five cubic centimeters of the reagent are reduced by 50 mg. of glucose.

33. Chlorides.

(The Lütke Martius Modification of Volhard's Method.)

Principle.—The chlorides are precipitated by a stipulated quantity of a standard solution of silver nitrate in an excess of nitric acid. The precipitate is filtered off, and the filtrate is examined to discover the excess of unprecipitated silver chloride. For this a standard solution of potassium sulphocyanide is employed, the indicator being a solution of iron alum. When all of the silver has combined with the sulphocyanide to form silver sulphocyanide, any additional sulphocyanide added forms ferric sulphocyanide, which gives a deep red color and indicates the end of reaction. Having determined in this way the amount of excess silver nitrate (i. e., the amount which had not combined with urinary chlorides), we may subtract the figure from the amount of standard solution employed and so determine the amount which had actually combined with the chlorides.

Reagents.—(1). Silver nitrate solution, of which 1 c.c. precipitates 0.01 gm. of NaCl. For this 29.059 gm. of silver nitrate should be dissolved in 1 liter of water. This solution may be checked as follows: Chemically pure NaCl is dried at 120° C. Then 0.150 gm. is weighed out and dissolved in 100 c.c. of distilled water. Five drops of 5 per cent potassium chromate are added, and the silver solution is added from a burette. It should require 15 c.c. of the latter to bring about an orange tint.

(2). Potassium sulphocyanide solution, of which 1 c.c. precipitates 1 c.c. of the silver nitrate solution as described under (1). The actual amount should be 16.62 gm. per liter of water, but since the salt absorbs water, it cannot be weighed with exactness. Therefore, above 22 grams are dissolved in 1200 c.c. of water. This is then titrated against the silver nitrate solution. 10 c.c. of the silver nitrate solution are placed in an evaporating dish with 100 c.c. of water. The mixture is acidified with HNO_3 and 5 c.c. of a saturated solution of ammonia-ferric alum are added. The potassium sulphocyanide solution is then run in from a burette until a permanent red color is secured. If the solution is correctly prepared, exactly 10 c.c. would be required. If less than this amount was needed, the solution was too strong and will require dilution with water; if more than 10 c.c. were used, the solution was too weak and will require additional potassium sulphocyanide. The exact amount may be computed mathematically, but after readjustment the solution must be titrated until its strength is such that exactly 10 c.c. precipitate 10 c.c. of the silver solution.

(3). A saturated solution of ammonio-ferric alum.

(4). Nitric acid.

Procedure.—Place 10 c.c. in a measuring flask of 100 c.c. capacity or in a graduate of this capacity. Add 50 c.c. of water, 5 c.c. of nitric acid, and 20 c.c. of the silver nitrate solution. The latter should be measured accurately either with pipette or by allowing it to run out of a burette. Shake the mixture thoroughly, add distilled water up to the 100 c.c. mark and again shake. Then filter through a dry filter. Take 50 c.c. of the filtrate, representing 5 c.c. of the urine originally used, pouring it into a beaker. Add 5 c.c. of the saturated solution of ammonio-ferric alum and add the sulphocyanide solution from the burette until a first appearance of a permanent red color.

Calculation.—Multiply the number of c.c. of sulphocyanide solution used by 2 and subtract from 20. This gives the number of c.c. of AgNO_3 solution which were used up in the precipitation of the chlorides in 10 c.c. Each c.c. of AgNO_3 solution represents 0.01 gm. of NaCl. These figures, of course, represent the amount in 10 c.c. of urine. The amount per c.c. may be ascertained by dividing by 10.

Normal Quantity.—The usual amount of chlorides voided in 24 hours is 10 to 15 grams.

34. Total Nitrogen.

Principle.—By boiling urine with concentrated sulphuric acid in the presence of an oxidizing agent, the various nitrogenous bodies are converted

to ammonium sulphate. This is then decomposed by the action of an alkali with the formation of ammonia, which is liberated by distillation and is collected in acid of known strength. The acid may then be titrated with a standard alkali solution, and the amount of liberated ammonia so computed.

Procedure.—In a long necked Kjeldahl flask place 5 c.c. of urine, measuring it with a pipette, and add 20 c.c. of concentrated sulphuric acid and a crystal of copper sulphate. Heat the flask of wire gauze in a fume closet until white fumes are driven off. Then add about two grams of potassium sulphate. This aids the action of the decomposition by raising the boiling point of the sulphuric acid. Boil the mixture for at least 30 minutes after it has become colorless. Let the flask cool and then add about 300 c.c. of distilled (ammonia-free) water. Add about a teaspoonful of powdered pumice to prevent lumping, a small piece of paraffin to obviate frothing, and 60 c.c. of 30 per cent sodium hydrate, or more, if this does not suffice to alkalize the mixture. The alkali should not be allowed to touch the neck of the flask, since its presence here would interfere with the tight-fitting of the rubber stopper. Shake the mixture and connect the flask to the safety-bulb of the distilling apparatus. Adjust the tip of the glass safety tube as it emerges from the condenser under the surface of the fluid in an Erlenmyer flask of about 500 c.c. capacity into which has been placed previously 50 c.c. of decinormal H_2SO_4 with 10 drops of Congo red and about 100 c.c. of distilled water. Distill for at least an hour, starting with a small flame. At the end of this time test a drop of the distillate with litmus. If it is alkaline, continue distillation until the distillate fails to redden litmus. When the fluid from the condenser is no longer alkaline, discontinue boiling and titrate the partially neutralized $\text{n}/10 \text{ H}_2\text{SO}_4$ in the Erlenmyer flask, using $\text{n}/10 \text{ NaOH}$, which should be added until the fluid shows a brilliant red color. When using reagents of unknown quality, a blank determination should be made according to this technic, omitting only the urine, and the result should be subtracted from the result obtained when urine is employed.

Calculation.—Subtract the number of cubic centimeters of $\text{n}/10 \text{ NaOH}$ used in titration from the number of cubic centimeters of $\text{n}/10 \text{ H}_2\text{SO}_4$ placed in the Erlenmyer flask. The difference equals the number of c.c. of $\text{n}/10 \text{ H}_2\text{SO}_4$ neutralized by the liberated ammonia. Since 1 c.c. of $\text{n}/10 \text{ H}_2\text{SO}_4$ is equivalent to 0.0014 gm. of nitrogen, the total amount of nitrogen is equal to the number of c.c. of $\text{n}/10 \text{ H}_2\text{SO}_4$ neutralized multiplied by 0.0014. The result represents the amount in 5 c.c. of urine. The percentage can be ascertained by multiplying the number of c.c.s of $\text{n}/10 \text{ H}_2\text{SO}_4$ neutralized by the factor 0.028.

Normal Quantity.—In health on an average diet the total amount of nitrogen excreted in the urine in 24 hours is about 15 or 16 grams.

35. Urea.

(Method of E. K. Marshall.)

Principle.—Urea is converted to ammonium carbonate by urease, an enzyme found in certain fungi, bacteria, and higher forms of plant life. This furnished a readily used method of determining urea, since urine may be treated with this enzyme and by comparing its alkalinity with that of an untreated specimen of equal volume, the amount of urea may be computed. In clinical work urease is ordinarily obtained from the soy bean (glycine hispida).

Procedure.—Into each of 2 Erlenmyer flasks of about 200 c.c. capacity put 1 or 2 c.c. of toluol and 5 c.c. of the urine to be examined. In one flask put 100 c.c. of distilled water, stopper it with a cork and shake it. This is the control flask. In a small glass mortar or beaker crush a urease* tablet with a glass rod. Suspend the resulting powder in about 10 c.c. of water, and pour it into the second flask. Then rinse the mortar or beaker into the flask with

*Urease tablets may be obtained from the Hynson-Westcott-Dunning Co., Baltimore, Md.

successive changes of water until 100 c.c. has been used. Cork the flask and shake it. Keep both flasks at room temperature for at least 8 hours.

If prompter results are desired, the test may be hastened by using the same technic except that 2 tablets are employed instead of one, and the two flasks are kept at 40° C. for 1 hour. The test may be expedited still further by using only 1 c.c. of urine in each flask, by adding 2 tablets, and by digesting the mixtures at 40° C. for 15 minutes. It should be remembered that the result must be multiplied by the factor 3 instead of by the factor 0.6 as given under calculation, if only 1 c.c. is employed.

When the stipulated time has elapsed, the contents should be titrated with $n/10$ HCl. Drop into each flask about 5 drops of 1 per cent alcoholic solution of methyl orange, and then add $n/10$ HCl from a burette until the color becomes a reddish orange.

Calculation.—The amount of ammonium carbonate formed is indicated by the increased alkalinity of the specimen treated with urease when compared to the control specimen. From the number of c.c. of $n/10$ HCl required to neutralize the specimen treated with urease, subtract the number of c.c. required to neutralize the control. The remainder should be multiplied by the factor 0.6, when the result will represent the number of grams or urea per liter. The amount of urea nitrogen may be ascertained by dividing by the factor 2.14.

Normal Quantity.—In health with an average diet the amount of urea excreted in 24 hours is 20 to 40 grams. Of the total nitrogen excreted, from 60 to 90 per cent is urea nitrogen.

36. Ammonia.

Principle.—Ammonia is set free from the urine by the addition of a fixed alkali. It is then removed by the passage of a strong current of air and is collected in $n/10$ H_2SO_4 . The amount of acid which has been neutralized may be determined by titration with $n/10$ NaOH.

Procedure.—Place in a tall aerating cylinder 25 c.c. of urine, 1 gram of dry potassium carbonate and about 5 c.c. of crude petroleum, and in the receiving cylinder place 20 c.c. of $n/10$ H_2SO_4 and three drops of Congo red (0.5 gm. Congo red in a mixture of 90 c.c. of distilled water and 10 c.c. of 95 per cent alcohol). A Folin absorption tube should be used, and sufficient water should be added to the acid to completely immerse the tube. The apparatus should be connected up so that the air current will be drawn through dilute sulphuric acid before it is aspirated into the urine, so that any ammonia in the air will be removed. Allow the air current to run for about an hour, at first slowly, then more rapidly. At the end of this time, titrate the acid with $n/10$ NaOH until neutralized.

Calculation.—Subtract from the number of c.c. of $n/10$ H_2SO_4 the number of c.c.s of $n/10$ NaOH required for neutralization. The difference is the number of c.c. of $n/10$ H_2SO_4 neutralized by the liberated ammonia. Since each c.c. of $n/10$ H_2SO_4 corresponds to .0017 gram of NH_3 or to .0014 gram of ammonia N, the amount of these substances in the urine may be computed readily by multiplication. The amount per each c.c. urine would then be ascertained by dividing by 25.

The percentage of NH_3 may be determined with the following formula, in which x is the percentage of NH_3 , A is the volume of urine used in the test, and B is the number of c.c. of $n/10$ H_2SO_4 neutralized by the NH_3 of the urine, as determined by titration.

$$A : 100 = B \times 0.0017 : X.$$

The amount of ammonia nitrogen may be determined by substituting the factor 0.0014 for the factor 0.0017 in the formula given here.

Alternate Clinical Method.

(Folin, Laboratory Manual of Biological Chemistry,
D. Appleton & Co., 1916, p. 83.)

Principle.—The acidity of a given quantity of urine is determined by titration with $n/10$ alkali. Then to the urine is added neutralized formalin,

which combines with the ammonia to form neutral hexamethylene tetramin and so sets free the acid equivalent of the amount of ammonia present.

Reagents Required.

- a. N/10 NaOH solution.
- b. Phenolphthalein solution.
- c. A saturated solution (neutral to phenolphthalein) of potassium oxalate solution.
- d. Formalin, also neutral to phenolphthalein.

The latter two reagents should be neutralized by adding a few drops of the phenolphthalein solution and then enough n/10 NaOH to produce a faint pink coloration.

Procedure:

Add 5 c.c. of the neutralized potassium oxalate solution, 3 drops of phenolphthalein solution to 25 c.c. of urine. Titrate with n/10 NaOH until a faint but unmistakable pink color appears. Then add 5 c.c. of neutralized formalin and again titrate to the same faint pink color. The difference between the total amount of alkali employed and that used for the first titration represents the alkali required to neutralize the acid set free by the combination of ammonia with formaldehyde. Each c.c. of n/10 alkali used corresponds to a c.c. of n/10 ammonia.

Calculation:

This would be carried out as in the previous test.

Normal Quantity.—In health with an average diet the amount of ammonia excreted in 24 hours is about 0.7 grams. The ammonia nitrogen represents from 2.5 to 4.5 per cent of the total nitrogen excreted.

37. *Uric Acid.*

Principle.—Urine is treated with a solution containing ammonium sulphate, uranium acetate, and acetic acid to precipitate a mucoid substance. This is necessary since this substance would interfere with the precipitation of uric acid were it not removed. To the resulting filtrate ammonia is added, thereby precipitating ammonium urate. The precipitate is dissolved with sulphuric acid, and amount of the uric acid is then titrated with potassium permanganate.

Procedure.—Place 300 c.c. of urine in a 500 c.c. flask and add 75 c.c. of the Folin-Shaffer reagent (500 grams of ammonium sulphate, 5 grams of uranium acetate, and 60 c.c. of 10 per cent acetic acid dissolved in 650 c.c. of water). Filter after standing about 5 minutes through a double folded filter and measure off two portions of 125 c.c. each into 2 beakers. To each portion add 5 c.c. of concentrated ammonia, stir, and allow to stand 24 hours. Filter the supernatant fluid through a hard filter (Schleicher and Schull No. 597), and then wash the precipitated ammonium urate carefully into the filter with 10 per cent ammonium sulphate solution. Fill the filter with the same reagent. After it has filtered out, open the paper and wash the precipitate into a beaker with 100 c.c. of water. 15 c.c. of concentrated H_2SO_4 are added. While still warm titrate the solution with n/20 potassium permanganate solution (1.581 grains of potassium permanganate dissolved in 1000 c.c. of water) until a faint rose color tinges the entire volume of fluid. Proceed slowly toward the end of the titration and add the permanganate solution in portions of two drops each.

A determination is made on each of the samples. Of these, take the average.

Calculation.—The average reading in c.c.s multiplied by the factor 3.75 plus a correction of 3.0 mg (for the ammonium urate which remains in solution and is not precipitated) gives the milligrams of uric acid per 100 c.c. of urine.

38. *Creatinin.*

(Folin's Method.)

Principle.—When picric acid and sodium hydrate are added to solutions containing creatinin, a red color is produced, the depth of the color varying

with the amount of the substance present. The depth of color is measured in a colorimeter by comparison with a solution of potassium dichromate of known strength, and the amount of creatinin is computed from this reading.

Procedure.—Place 10 c.c. of urine in a 500 c.c. volumetric flask and add 15 c.c. of a saturated solution of picric solution and 5 c.c. of a 10 percent solution of sodium hydroxide. Shake the mixture and allow it to stand 5 minutes. Then with this solution partly fill one of the cylinders of a Dubosq colorimeter, filling the other to the 8 m.m. mark of $n/2$ potassium bichromate (24.55 grams to the liter). Several readings should be made and the average taken.

Calculation.—Divide 8.1 by the average reading and multiply the quotient by total 24 hour amount of urine. The result will represent the number of milligrams of creatinin in the 24 hour specimen.

Normal Quantity.—The normal excretion of creatinin is given as 20 to 30 mgm. per kilogram of body weight. The creatinin nitrogen is about 3 to 5 percent of the total nitrogen on an average diet.

39. Creatin.

Principle.—Creatin is converted to creatinin by dehydrating it with a dilute mineral acid. The total amount of creatin may now be determined. By subtracting the previously determined creatinin from this determination, the difference represents the creatin formed by dehydration from creatinin.

Procedure.—In each of two Erlenmeyer flasks of about 100 c.c. capacity, place 10 c.c. of urine, and 10 c.c. of normal HCl. Heat the flask in an autoclave for about 30 minutes at 20 pounds pressure. Then remove the flasks, cool them, and to each add 10 c.c. of normal sodium hydrate solution to neutralize the acid. Determine the creatinin by Folin's method.

Calculation.—Subtract from this determination the amount of preformed creatinin as determined on a specimen which has not been subjected to dehydration, and the difference will give the creatinin formed from creatin. The amount of creatin may be obtained by multiplying this figure by the factor 1.16.

40. Nitrogen Partition.

The amount of N excreted in various forms is determined, and the total N is ascertained. With these figures percentages may be computed. Suppose, for example, the total nitrogen be 9.7 grams, the urea nitrogen be 8.4 grams, the ammonia nitrogen be 0.26 grams, and the creatinin nitrogen is 0.64 grams. Then the distribution would be as follows:

Urea nitrogen $= 8.4 \div 9.7 = 86.6\%$.

Ammonia nitrogen $= 0.26 \div 9.7 = 2.7\%$.

Creatinin nitrogen $= 0.64 \div 9.7 = 6.6\%$.

It is needless to say that the quantities of these substances should be reduced to terms of nitrogen before the computations are made.

41. Excretion of Phenolsulphonephthalein as a Test for Renal Function.

Apparatus and Reagents Required.—In performing this test the following apparatus and reagents are required:

Hypodermic syringe, glass, accurately graduated.

Ampoules containing phenol-sulphone-phthalein in sterile solution, 0.006 gm. in each cubic centimeter.

Standard solution of phenol-sulphone-phthalein.

5% of sodium hydrate.

1000 c.c. graduate or measuring flask.

Hellige, DuBosq, or a Hynson-Westcott-Dunning colorimeter.

The ampoules may be obtained from the Hynson-Westcott-Dunning Company.

The standard solution is prepared by adding to 0.006 gm. of phenol-sulphone-phthalein, 10 c.c. of 5% NaOH and sufficient water to bring the total bulk of the solution up to 1 liter. By keeping this in a dark bottle it may be preserved for some time.

A Dubosq or Hellige colorimeter is desirable. Either can be used for other purposes. If neither is available, a small and inexpensive colorimeter may be purchased from the Hynson-Westcott-Dunning Company. This is suitable for this test only, however.

Procedure.—The patient is given a glass of water to drink. One-half hour later the bladder is emptied by catheterization if necessary. A sterile hypodermic syringe is filled with exactly 1 c.c. of the phenol-sulphone-phthalein solution, which contains 0.006 gm. of the chemical. This is then injected into the muscular tissue, preferably in gluteal or lumbar regions. The area selected should be free from oedema. The bladder is emptied one hour after the injection of phenol-sulphone-phthalein and again at the end of two hours either by voiding or by catheterization. The two specimens so obtained are examined separately. 10 c.c. of 5% NaOH solution are added and the total volume in each specimen is brought up to 1000 c.c. with distilled water. The cup of the colorimeter is filled with some of the resulting mixture and the percentage is read off on the scale. The sum of the readings obtained from the two specimens represents the percentage of the dye excreted in two hours. Normally the excretion is from 50 to 65% in the first hour, and a total of from 70 to 90% at the end of two hours.

42. *Obtaining Urine for Cultural Purposes.*

In infants, children, and women, a catheter should be passed under aseptic conditions and the urine should be drawn into a sterile container. With adult males, this is usually unnecessary. The glans penis is cleansed with soap and water and is then mopped with 1 to 5000 bichloride of mercury solution. The patient is instructed to void the first 4 or 5 ounces into an extra container as a means of washing out the anterior urethra. The urine is now allowed to flow into a sterile container.

43. *Examination of Urine for Tubercle Bacilli.*

The urine should be obtained as described above, as though it were desired for cultural purposes. Fill two centrifuge tubes with urine and centrifuge for 5 minutes. Then pour off the supernatant fluid, add fresh urine, and again centrifugalize. Repeat the operation a number of times, until the sediment represents that obtained from 150 or 200 c.c. of urine. The sediment should be "washed" with *freshly* distilled water if a precipitate of urinary salts is present by filling the tubes with distilled water and centrifugalizing for 5 minutes. The supernatant fluid is poured off and the process is repeated. The sediment may now be spread thin upon a slide, usually a small drop of Mayer's egg albumin to facilitate adherence. After drying and fixing in the usual way, stain by steaming with carbol-fuchsin for two minutes, as directed in the section on "Sputum." In decolorizing, especial precautions must be taken to rule out acid-fast organisms other than tubercle bacilli, particularly the smegma bacillus. The slide should be allowed to remain over night in 95% alcohol before counterstaining, or it should be decolorized and simultaneously counterstained by pouring Pappenheim's decolorizing fluid over the slide and draining it off for 5 times. This decolorizing solution is prepared as follows: 1 gram of rosolic acid (corallin) in 100 c.c. of absolute alcohol, the mixture is saturated with methylene blue, and 20 c.c. of glycerine are added.

CHAPTER TWO.

Examination of Sputum.

1. *Obtaining the Specimen.*

When a patient is asked to furnish a specimen of sputum he should be impressed with the point that the sputum desired is that coughed from

"deep down" (from the lungs) and not that from the mouth, nose or throat. In office or dispensary practice furnish the patient with a clean, dry, wide-mouth bottle.

Children usually swallow sputum. Sputum may be obtained from a child by irritating the pharynx with a cotton-wrapped swab or with the finger, wrapped with a piece of sterile gauze. The sputum raised by the resulting cough can be caught on the swab. Another method is to obtain the stomach contents by passing a small catheter.

2. *Precautions Against Infection.*

In the laboratory, the specimen should be handled with great care. Spread a newspaper on the work-table and perform all steps of making preparations on it. When through, fold the paper up and burn it or have it autoclaved. See that a basin containing 1/20 phenol solution is at hand, and when the examination is done put into this corks, extra slides, bottle, Petri dishes, or any other glass-ware which has come into contact with the sputum. This should then be sterilized by boiling or by live steam in an autoclave. If particles of sputum are dropped on bench or floor, flood with 1/20 phenol at once.

3. *Preparing the Slides in Search for Tubercle Bacillus.*

The sputum should be poured into a Petri dish. With wires which have been flamed, pick up any "rice bodies" (caseous particles). A still better method is to pour the sputum over a glass plate. A second smaller plate is placed on this and is pressed down. With a dark background the "rice bodies" may be seen. For this reason, the laboratory table should have a black top, or should be covered with some dark material. The top plate is slid over the lower one until one of the bodies emerges, when it may be picked up with a wire. These "rice bodies" should be hunted with care. Smear them on slides. Avoid simple mucus or pure blood or pus. Make rather thick preparations. Allow them to dry in air, and then fix by passing through flame two or three times.

4. *Staining for Tubercle Bacilli.*

Grasp the slide with a coverslip forceps, flood with carbol-fuchsin, and hold the slide over a low flame so that the stain will steam. Do not allow it to boil. Drop fresh stain on constantly so that the stain does not dry and crystallize at the edges, for this makes a deceptive preparation. Continue steaming at least 2 minutes. Pour off stain, wash slide with water, immerse in acid alcohol (2% HCl in 85% alcohol) until slide appears practically colorless ($\frac{1}{2}$ to 2 minutes), then in 95% alcohol till no more color is removed (1 to 5 minutes or longer). Dry and counterstain with Loeffler's methylene blue for 2 minutes. Wash with tap water, dry, and examine with oil immersion lens. The use of a mechanical stage is recommended for a really careful and thorough search.

5. *Antiformin Method of Preparing Sputum for Examination for Tubercle Bacilli.*

Place equal quantities of sputum and antiformin into a small bottle provided with a well-fitting rubber stopper. Care should be taken that all the utensils are thoroughly clean, and that only freshly distilled water is employed, on account of the possibility of introducing acid-fast bacilli in old distilled water or tap water. Shake the mixture thoroughly until of thin consistency and then pour into a centrifuge tube. After centrifugalization decant the supernatant fluid and then fill the tube with sterile physiological salt solution in order to wash the sediment free of alkali. Again centrifugalize, pour off the salt solution, spread the sediment on a slide, dry it, fix with heat, and stain in the usual way for tubercle bacilli.

The writer's personal experience has been that this method affords no better results than a careful hunt for caseous particles according to the method already described.

6. *Cultivation of B. Tuberculosis.*

(Petroff's method—*John Hopkins Hospital Bul' in*, Vol. XXVI, No. 294, Aug., 1915).

The sputum should be obtained in as nearly an aseptic manner as is possible. Mix equal parts of sputum and 3% sodium hydroxide, shaking well. Incubate the mixture at 38° C. for from 15 to 30 minutes, until it has become of thin consistency. Then add hydrochloric acid until the mixture is neutral to litmus and centrifugalized at high speed for 10 minutes. Pour off the supernatant fluid and inoculate the sediment into tubes containing Petroff's medium.

The tubes should be left in the incubator for a few days, until the moisture has evaporated or has been absorbed by the medium. Then the cotton stopper should be paraffined, or it should be removed and a sterile paraffined cork should be inserted in its place. The temperature should be kept at 38.5° C. as constantly as is possible.

Petroff's media is prepared by mixing one part of meat juice, two parts of egg (both white and yolk), and gentian violet in quantity sufficient to make 1 part to 10,000 parts of media. The ingredients are prepared as follows:

I. *Meat Juice.* Infuse 500 grams of ground beef or veal in 500 c.c. of a 15% aqueous dilution of glycerine. At the end of 24 hours squeeze out the meat in a sterile press, collecting the infusion in a sterile glass beaker.

II. *Eggs.* Allow the eggs to remain in 70% alcohol for about 15 minutes to sterilize the shells. Break the shells and pour into a sterile beaker. Mix well with a sterile glass rod, and filter through sterile gauze.

III. *Gentian Violet.* Prepare a 1% alcoholic solution and add to the media to give a dilution of 1 to 10,000.

When the ingredients have been mixed in the proper proportions, it is tubed and inspissated, at 85° C. on the first day in order to solidify it, and at 75° C. on the two following days, for periods of 1 hour.

The reason for the use of Petroff's medium is that the presence of gentian violet in the medium inhibits the growth of most of the contaminating organisms except staphylococci and streptococci, which are destroyed by the treatment with sodium hydrate.

The length of time required for a visible growth to appear varies from 5 to 15 days, the average time being 9 to 10 days. The growth is seen as a granular, heaped up, yellowish streak. A slide preparation should be made and stained by the customary technic as outlined above.

If subcultures are desired, it is unwise to make them on the medium containing gentian violet, since this dye ultimately retards the growth.

7. *Impression Method of Making Preparations.*

In staining for organisms other than the tubercle bacillus and especially when a study of the cell morphology is desired, the "impression method" of making slides should be followed. A drop of muco-purulent material is taken up on a platinum wire and is touched to the surface of the slide in a number of different places. It should not be smeared over the surface or the cells will be broken up.

8. *Staining the Influenza Bacillus.*

The influenza bacillus stains very slowly with ordinary dyes. It is tiny and is irregular in size, especially in length. It may appear as a very small diplococcus or short diplo-bacillus, or may be somewhat longer. The longer forms stained with the following technic for Gram's stain may appear as "safety-pins," the ends being a faint violet, the central portion red. The organisms occur most frequently in clumps.

Slides should be made by the "impression method." Gram's stain is recommended. Counter-stain for 5 minutes with diluted carbol-fuchsin (*i. e.*, one part of carbol-fuchsin plus 19 parts of water).

9. *Technic for Gram's Stain.*

Stain slide $1\frac{1}{2}$ minutes with anilin-water gentian violet. Pour off and wash slide with Lugol solution, not water, allowing some of the reagent to stand on slide $1\frac{1}{2}$ minutes. Wash with water, and immerse in absolute alcohol 10 minutes. Counterstain with Bismarck brown or with carbol-fuchsia, diluted 1:10 with water.

10. *Cultivation of B. Influenzae.*

A sterile container should be given to the patient for the collection of the sputum. Six sterile Petri dishes or small beakers should be partly filled with sterile normal NaCl. A dense clump of sputum should be secured with a sterile platinum wire and should be washed by moving it vigorously about in succession in each dish of sterile NaCl solution. When the washing has been completed, the mass of sputum is drawn in parallel streaks across the surface of fresh blood agar plates or tubes, preferably the former. These plates or tubes should be prepared by adding under aseptic precautions a few drops of fresh blood to melted agar at 40° C., after which the agar should be allowed to solidify.

The influenza colonies are small and have a "dew drop" appearance. They appear in about 48 hours. Sub-plants may be made from them on to fresh blood-agar tubes. If a growth appears, slides should be examined to ascertain whether or not the organisms have the characteristic morphology and staining appearance. If so, further cultures should be made onto fresh blood-agar tubes and a control tube of plain agar. If characteristic colonies now appear in the former tube and not in the latter, the diagnosis of *B. influenzae* may be made. Care should be exercised to avoid carrying hemoglobin to the control tube of plain agar.

11. *Staining the Pneumococcus.*

Two smears are made, preferably by the impression method. One should be stained by Gram's stain, and one by a capsule stain.

Welch's capsule stain. Cover smear with glacial acetic acid and leave for a few seconds. Pour off acid (do not wash with water), and cover with anilin-water gentian violet, renewing the stain several times to get rid of the acid. Finally leave the stain for about 3 minutes. Wash in 2% sodium chloride solution and examine the preparation mounted in this fluid.

The pneumococcus is Gram positive (*i. e.*, stains violet) and is enveloped in a capsule.

12. *Cultivation of the Diplococcus Pneumoniae.*

Wash a mass of sputum as directed under "Cultivation of *B. influenza*." Cultures should be made on Loeffler's blood serum, dextrose broth, and if possible, a fresh blood agar. The dextrose broth and the agar should have been prepared from beef or veal infusion, and should be neutral and slightly alkaline in reaction. If a growth appears, which microscopical examination shows to resemble the pneumococcus morphologically, make plates from the dextrose broth on plain agar. To isolate the pneumococci in pure culture, pick out small, round, transparent colonies after twenty-four hours' growth and inoculate into glucose broth. Should microscopical examination show the organisms to resemble the pneumococcus morphologically, make sub-cultures into litmus milk and inulin-serum water with about 3 to 5 drops of the dextrose broth culture. The pneumococcus would cause the production of acid in milk and coagulation of the medium, and would coagulate the inulin-serum mixture by producing acid.

13. *Examination for Heart Failure Cells.*

Place a bit of sputum on a slide, cover with a cover-slip, and examine with the 6 objective. Heart failure cells (*herz-fehlerzellen*) are alveolar epithelial cells containing brownish pigment granules. The pigment is hematin or hemosiderin. The latter gives an iron reaction. Run a dilute solu-

tion (5%) of potassium ferrocyanide under the coverslip and then dilute (5%) hydrochloric acid. The granules will take a prussian blue color.

14. *Examination for Curschmann Spirals.*

Put a bit of mucus on a slide, and examine without staining and without a coverslip, using No. 3 objective.

15. *Examination for Elastic Tissue.*

This may be conducted by examining a thin layer of the sputum spread on a piece of glass against a dark background, using a hand-lens. Any suspicious portion can be removed with a teasing needle, placed on a slide, and studied with microscope.

When elastic fibres cannot be found in this way, the sputum may be treated as follows:

Put 5 or 10 c.c. in a test-tube. Add an equal volume of 10% sodium hydrate, and heat until dissolved. It is not necessary to heat quite to the boiling point. Shake, add an equal volume of distilled water, and centrifuge. Decant or pipette off the supernatant fluid. The sediment should be smeared on a cover-slip, fixed in heat, and stained by placing in a beaker of Weigert's elastic tissue stain, which is heated over a water bath for about 5 minutes. The cover-slip is then washed with water, decolorized with 95% alcohol, dried, and mounted in balsam.

CHAPTER THREE.

Examination of Gastric Contents.

1. *Gross Appearance.*

After obtaining gastric contents, observe the following points: Amount of contents, color, odor, amount of food, presence of mucus, separation into layers.

The gross appearance should be observed and studied carefully, since frequently more information may be secured in this way than from the chemical examination.

2. *Microscopic Examination.*

Place a drop on a slide, cover with a coverslip, and examine microscopically with the same precautions about darkening the field as were outlined under "Urine." Note the presence or absence of the following: elastic tissue, muscle fibers, fat drops, fatty acid crystals, starch, plant fragments, small masses of mucus, leucocytes, red-blood cells, bacilli, sarcinae, yeast-cells.

Starch may be stained with Lugol's solution (undigested soluble starch, blue; erythro-dextrin, red; achroo-dextrin, no color). Fat drops may be stained with Sudan III (red color). Oppler-Boas bacilli stain brown with Lugol's solution, while mouth organisms of similar morphology stain blue.

3. *Chemical Examination.*

Remember that in neutralizing acid stomach contents with the following indicators the end-points and their significance are as follows:

Di-methyl-amido-azo-benzol: End-point, canary yellow. When reached means that free acids are neutralized.

Phenol-phthalein: End-point, deep red. Means that free acids, combined acids, and acid salts have been neutralized.

Alizarin: End-point, deep violet. Means that free acid salts have been neutralized.

Procedure: 1. *Determination of free and total acidity.*

a. Start contents filtering through gauze.

b. While filtering, examine drop of unfiltered contents microscopically.

c. Into a porcelain dish, pipette 5 c.c. of the filtrate; add 15-20 c.c. distilled water and 3 drops of dimethylamidoazobenzol solution. (A bright red color appears if free HCl is present).

d. Fill burette and nozzle with N/10 NaOH solution, and take the reading.

e. Add the N/10 NaOH solution drop by drop, stirring gastric contents continuously, until the color has changed to a bright canary yellow.

f. Then take reading. The number of c.c.'s of decinormal sodium hydrate neutralized corresponds to the amount of decinormal free HCl acid present in 5 c.c. of gastric contents.

g. To same portion of canary yellow gastric contents in the dish, add 3 drops of phenolphthalein solution.

h. Again add the N/10 NaOH solution drop by drop, stirring the contents continuously, until the color changes to a deep cherry-red, which does not deepen on the addition of further NaOH solution. The number of c.c.'s of decinormal sodium hydrate now neutralized *since the titration was started* corresponds to the amount of total acids present in 5 c.c. of gastric contents.

i. With another 5 c.c. portion of stomach contents, repeat the titrations as a check, and take the average of the readings.

Calculation. The results are ordinarily expressed in terms of the number of c.c.'s of N/10 NaOH required to neutralize 100 c.c. of gastric contents. The results obtained in the titration with 5 c.c. of stomach contents are simply multiplied by 20.

Example: A. Original reading in the n/10 NaOH burette = 5.5.

B. Reading when the di-methyl-amido end-point has been reached

$$= 7.5.$$

C. Reading when the phenol-phthalein end-point has been reached

$$= 9.5.$$

B—A=2. Multiplying by 20 gives 40, the number of c.c. of n/10 NaOH required to neutralize the free HCl in 100 c.c. of gastric contents.

C—A=4. Multiplying by 20 gives 40, the number of c.c. of n/10 NaOH required to neutralize the total acids in 100 c.c. of gastric contents.

Normal free HCl is 30 to 40. Normal total acid is 50-80.

The number of c.c. of n/10 NaOH used to neutralize a given amount of stomach content when multiplied by the factor 0.00365 will give the actual amount of free HCl in the stomach contents expressed in grams.

2. *Hydrochloric Acid Deficit.* In case there is an absence of free HCl, the "HCl Deficit" should be determined.

a. Place 5 c.c. filtered gastric contents in an evaporating dish and add 3 drops of dimethylamidoazobenzol solution.

b. Add from burette N/10 HCl until a rose-red color is obtained.

c. Take original reading from final reading, and multiply by 20 to express the number of c.c. of N/10 HCl required to neutralize 10 c.c. of gastric contents.

3. *Combined Acids.*—When desired the amount of the combined acids may be determined by titrating 5 c.c. of filtered gastric contents with n/10 NaOH, using alizarin as an indicator. When a deep violet has been obtained, the end-point has been reached. One should become familiar with the end-point by adding a drop of alizarin to a 1% solution of sodium carbonate. Subtract the reading obtained from the reading obtained with the phenolphthalein as an indicator, multiply the remainder by 20, and the result indicates the combined acids in 100 c.c. of gastric contents.

4. *Lactic Acid*.—Ferric Chloride Test: Take two test-tubes of the same bore and height. Fill one almost to the top with water and add a few drops of 5% aqueous solution ferric chloride. Mix. Divide the contents between two test-tubes and to one add a few drops of gastric contents filtered through filter paper. A deepening of the yellow color is positive. The second tube serves as a control. It would be better to free the gastric contents from substances other than lactic acid which may also give this test. Extract some of the contents with ether, evaporate the ether extract to dryness, dissolve the residue in water, and use some of the dissolved residue in making the test described above.

5. *Blood*.—Take 2 c.c. of the unfiltered gastric contents, add 1 c.c. of glacial acetic acid and apply benzidine test as described under "Blood" in section on "Urine," q. v.

6. *Bile*.—With some of filtrate carry out one of the tests for bile described under section on "Urine," q. v.

4. *Quantitative Determination of Pepsin.*

(Rose's Method).

Solutions required. a. 0.25 gm. of pea globulin dissolved in 100 c.c. of 10% sodium chloride solution.

The pea globulin is secured by grinding up about 2 handfuls of peas and by extracting them with 200 c.c. of 10% sodium chloride solution. The resulting mass is filtered, and the filtrate is added to about 1 liter of distilled water. The pea globulin is precipitated and settles to the bottom. The supernatant fluid is filtered off and is dried at a low temperature.

b. 0.6% HCl.

This may be prepared from concentrated (36.5%) HCl by adding 2 c.c. of the latter to 118 c.c. of water.

Procedure:

A known amount of gastric contents is made neutral to litmus by adding $n/10$ NaOH. If a precipitate appears it should be filtered off and the filtrate used. Sufficient water is then added to dilute to 5 times the original volume. This diluted and neutralized stomach contents is then divided into two portions, one of which is boiled.

For the determination six test tubes are used. In each tube place 1 c.c. of the globulin solution and 1 c.c. of the hydrochloric acid solution. Allow 5 minutes to elapse for the development of turbidity. Then add to the tubes in order unboiled diluted gastric contents as follows:—first tube, none; second tube, 0.1 c.c.; third tube, 0.3 c.c.; fourth tube, 0.5 c.c.; fifth tube, 0.8 c.c.; sixth tube, 1.0 c.c.; and finally enough *boiled* diluted gastric juice to bring the contents to 3 c.c. The table illustrates the method of setting up the tubes:

Tube No.	1	2	3	4	5	6
Globulin Solution	1.0	1.0	1.0	1.0	1.0	1.0
HCl	1.0	1.0	1.0	1.0	1.0	1.0
Unboiled dil. gastric juice.....	0	0.1	0.3	0.5	0.8	1.0
Boiled dil. gastric juice.....	1.0	0.9	0.7	0.5	0.2	0

Quantities are given in c.c. In each instance the total acidity equals 0.2%.

Incubate the tubes at 36° C. for one hour. Examine the tubes and select the one containing the smallest amount of gastric juice showing no turbidity. This indicates the least amount which completely digests the globulin.

Calculation.—The enzyme content is expressed by the number of c.c. globulin solution that would be digested by one c.c. of *undiluted* gastric juice.

Example.—Tubes No. 1, No. 2, and No. 3 are cloudy, but No. 4 is clear. This means that digestion of 1.0 c.c. of the globulin solution has been effected by 0.5 c.c. of a 1/5 dilution of gastric contents, or by 0.1 c.c. of undiluted gastric juice. If 0.1 c.c. of undiluted gastric juice digests 1.0 c.c. of globulin solution, 1.0 c.c. would digest 10 c.c., and we would say that the enzyme content is 10 units.

Normal Results.—Are about 10 units. In cancer, the results range from 0 to 3.

5. *Quantitative Determination of Dissolved Albumin.*

(Method of Wolff and Junghaus).

Solutions required:

Phosphotungstic acid (pure).....	3 c.c.
Hydrochloric Acid (concentrated).....	10 c.c.
Alcohol (96%)	200 c.c.
Aquae dest., to make.....	2000 c.c.

This is kept in a bottle with a rubber stopper.

Procedure.—Two dilutions of gastric juice are prepared, A & B. A is a 1/5 dilution, and should contain 1 c.c. of undiluted gastric juice and 4 c.c. of distilled water. B is a 1/50 dilution and should contain 1 c.c. of A and 9 c.c. of distilled water. Now set up a test-tube rack with 6 test-tubes and place in each 1 c.c. of distilled water. To the first, add 1 c.c. of dilution A. Mix well by drawing a portion of the fluid into the pipette and then ejecting back into the tube, repeating the operation 2 or 3 times, when 1 c.c. of the mixture may be placed in the 2nd tube. Mix as before, then carry 1 c.c. of this mixture to tube 3, again mix, and discard 1 c.c. Next prepare tube 4 by adding 1 c.c. of the 1/50 dilution from B. Mix this and place 1 c.c. in tube 5. Repeat the operations until tube 6 is mixed, when 1 c.c. should be discarded. The series of tubes now contain respectively 1 c.c. of 1/10, 1/20, 1/40, 1/100, 1/200, 1/400 dilutions. To each add 1 c.c. of the phosphotungstic acid solution, layering it over the diluted stomach contents. A pearly white ring at the junction of the gastric juice with the reagent denotes a positive reaction.

Certain precautions should be observed. The secretion must be examined immediately after its withdrawal. The test meal should be given on an empty stomach, to guard against the presence of residues. The patient should be instructed not to swallow salivary or bronchial secretions while the meal is in the stomach.

Readings.—Normally positive reactions are obtained in dilutions from 1/10 to 1/50 in normal individuals. When present in dilutions of 1/100, 1/200, 1/400, malignancy is indicated (according to the authors of the test).

6. *Obtaining Gastric Contents with Duodenal Tube and the Fractional Method of Examination.*

An Einhorn or Rehfuß tube should be provided, with a glass syringe of 20 c.c. capacity, which may be attached to the free end.

The patient may be given an Ewald meal. If this is employed, the crust should be removed from the bread, and especial precautions should be taken to see that mastication is thorough. About 15 minutes after the ingestion of the meal the tube is introduced. The patient is directed to tip the head back and the metal olivary body is slid into the pharynx over the dorsum of the tongue. Usually its further passage may be accomplished by directing the patient to swallow repeatedly. If this is not effectual, a very small amount of water may be given. The tip has reached the lumen of the stomach after the 35 c.m. mark has passed the teeth and before the 50 c.m. mark has reached this point. The contents are now obtained by aspirating with a syringe. A small quantity, *i. e.*, a little over 5 c.c., may be removed every 10 minutes until an hour and 15 minutes has elapsed since the ingestion of the test meal. Each specimen should be examined separately for the amount of free HCl and the total acidity. The small residues remaining may be pooled and utilized for the tests for lactic acid, blood, bile, and for microscopical examination.

If desired, a cup of hot beef bouillon may be given instead of the Ewald meal. If this is used, it should be remembered that the acidity curve is apt

to be higher. Some workers prefer to introduce the tube when the bouillon is given, using the bouillon to assist in the passage of the tube.

From the chemical determination made on the successive fractions of gastric secretion, a curve may be constructed in which the acidity per cent (the number of c.c. of $n/10$ NaOH required to neutralize 100 c.c. of contents) is placed on the vertical line, and the time intervals are spaced along the horizontal base line.

References

Einhorn, *Am. Journ. Med. Sciences*, Feb., 1916, No. 527, p. 202.

McNeil, *Am. Journ. Med. Sciences*, Jan., 1916, No. 516, P. 106.

Robinson, *Arch. of Int. Med.*, Feb., 1917, Vol. XIX, p. 220.

7. Obtaining Duodenal Contents and Its Study.

The following explicit directions are given by Robinson (*Arch. Int. Med.*, Feb., 1917, Vol. XIX, p. 220): "The tip was introduced into the mouth when the patient was lying down. The patient then swallowed, and as soon as the tip passed into the esophagus he assumed the sitting posture, being requested not to swallow any more and to expectorate all saliva. By supporting the tube and having the patient breathe slowly and deeply, the tip slowly passes down the esophagus into the stomach. The tubes are marked at 35 cm., 50 cm., 60 cm., 70 cm., etc., from the tip. When the 35 cm. mark passes the teeth, the tip is at the cardiac orifice. The patients were then placed on their right side. The tip then, together with what secretions are present, gravitates toward the pylorus. No secretions can be aspirated until both the tip and the gastric secretions reach the pylorus. The distance from the pylorus to the mouth is indicated by the second mark (50 cm.) on the tube. Specimens were then obtained every ten minutes until the tip passed through the pylorus into the duodenum. This took, in normal cases, about thirty minutes."

Normally the duodenal contents are of clear yellow color. It is stated that ordinarily about 15 c.c. can be aspirated at first, and then about 10 c.c. every 10 minutes. Free HCl should not be present and ordinarily the total acidity is about 5 points lower than that of the gastric contents. If allowed to stand several days the amber color will change to green, due to the oxidation of bilirubin to biliverdin. Microscopically in normal cases there are seen few white blood cells, epithelium, and bacteria. Specimens should be examined for chemically free HCL, total acidity, lactic acid, blood, bile, and microscopically for red blood cells, white blood cells, epithelium, bacteria, and gall stone detritus.

CHAPTER FOUR.

Examination of Faeces.

1. Method of Transporting Specimen.

When a patient is directed to bring a specimen of feces to the laboratory, it is advisable to furnish him with a glass jar, about 4 inches high and about 4 inches in diameter, fitted with a screw top. He should be told that the jar is to be only partially filled. In hospital practice, specimens may be sent to the laboratory in small white enamel or granite pails provided with covers.

When the purpose of the examination is to determine the extent of intestinal digestion, a test diet such as that of Schmidt and Strasburger, should be given.

2. Macroscopical Examination.

This should include a survey of:—odor, color, consistency, and the gross evidences of indigested food. A search for parasites and stones should be made if clinical indications point to its necessity. The presence or absence of blood, mucus and pus should be noted.

3. *Microscopical Examination.*

The specimen of feces should be thoroughly mixed with a glass stirring rod. A portion about the size of a chestnut is to be transferred to a mortar, in which it is ground with enough water to make a thin paste. Drops are then transferred to slides and treated as follows:

1. One drop is covered with an object glass and is examined with the high and low power lenses. The number and condition of the muscle fibers should be noted, paying especial attention to the presence or absence of striation. One should look also for parasitic ova, red blood cells, white blood cells, mucus particles, vegetable cells, yellow fatty acid salts of calcium, drops of neutral fat, etc.

2. To the next drop is added one or two drops of saturated solution of Sudan III (made with 70% alcohol). It is then covered with an object glass. The fat globules are stained red.

3. To the last drop is added a drop or two of Lugol's solution. After thorough mixing it is examined for starch cells, yeast cells and fungi.

4. *Search for Parasitic Ova.*

Method of Yaoita (*Deutsche Mediz. Wochen.*, 15 Aug., 1912, No. 33, p. 1540).

Search for parasitical ova conducted in the manner outlined in most text-books often yield negative results, even when ova are unquestionably present. Doubtless this is due to the fact that the proportion of ova is small and that many slides would have to be examined. The presence of large amounts of food residue impedes the search, for the microscopic field is not clear. The method proposed dissolves practically everything in the stool except the certain resistant food elements and the ova. The sediment obtained is examined in the ordinary way.

Take from different portions of the stool about 5 small particles, each the size of a pea, and place in a test-tube with about 10 to 15 c.c. of a mixture of equal parts of 25 per cent antiformin and ether. Shake vigorously. There will be a marked evolution of gas. If the feces are hard, an emulsion should be made by stirring them with a glass rod, adding the antiformin, and if necessary, applying heat. Then the ether may be added. The fluid is now filtered through a layer of loose gauze to remove the larger food remnants and the filtrate is centrifugalized in a centrifugal tube for one minute. Four distinct layers may be made out. The upper one is ether, colored yellow by the dissolved neutral fats and fatty acids. The second is a ring with suspended fine food particles, while the third is antiformin, colored yellow-brown or blackish brown, containing detritus and dissolved food material. The lower layer, occupying only a portion of the tip of the centrifuge tube, contains the undissolved food material (cellulose, epithelium, salts, elastic tissue, muscle fibres) and the parasitic ova. The latter are affected little or not at all by the reagents. Fifty per cent antiformin has a deleterious effect upon the eggs.

5. *Detection of Tubercle Bacilli in Feces.*

Blood stained bits of feces or bits of mucus should be selected and smears made. They should be stained with carbol-fuchsin and counter-stained as is directed in Chapter one, Section 45; to rule out smegma bacilli.

The feces may be treated as directed in the preceding section up to the point where it is ready to be inoculated into the culture tubes. This sediment should be washed with distilled water as directed in Chapter one, Section 45. The washed sediment is then stained as above.

6. *Method of Isolating Tubercle Bacilli from the Feces.*

(Petroff's Method.)

The feces are collected in wide mouthed jars or bottles, and are diluted with three volumes of freshly distilled water. The feces are mixed thor-

oughly with the water and are then filtered through several thicknesses of gauze to remove the solid particles. The filtrate is saturated with sodium chloride and allowed to stand 30 minutes. At the end of which time there will be found a floating film containing all the bacteria. This film is scooped up with a spoon and is placed in a wide-mouthed bottle with an equal quantity of normal sodium hydrate. The bottle is stoppered, is shaken vigorously, and is then kept at a temperature of 38° C. for three hours. During this time it is shaken frequently, and at the end of the time it is neutralized to litmus with normal hydrochloric acid. This is centrifugalized and the sediment is inoculated into several tubes of Petroff's or other suitable medium.

CHEMICAL EXAMINATIONS.

7. *Reaction.*

This is taken with litmus paper, employing the watery paste ground up in a mortar.

8. *Bile Pigments.*

A little of the feces are ground up in a mortar and enough saturated solution of mercuric chloride is added so that there are about equal quantities of fecal paste and mercury solution. The mixture should be mixed thoroughly, and allowed to stand over night. Normally, only a red color develops. This is due to hydrobilirubin. A green color indicates the presence of unchanged bilirubin, which is pathological. Where the flow of bile has been obstructed completely, no color change appears.

9. *Fermentation Test.*

The patient should be placed on Schmidt and Strasburger's test-diet No. 2. This comprises 1.5 liters of milk, 3½ eggs, strained oatmeal gruel (prepared from 80 grams of oatmeal), 100 grams of Zweibach, 20 grams of butter, 20 grams of sugar, 125 grams of steak (weight before cooking), and 190 grams of potato (weight before cooking). When this diet is instituted the patient should be given a capsule containing 0.3 gm. powdered carmine. The stools are watched for the appearance of the carmine, in order to be certain that the specimen examined be obtained from the diet. The second or third stool passed after the first appearance of carmine should be used for the test.

For this test a Schmidt fermentation apparatus will be required. Cuts may be found in all standard texts. In the bottle is placed about 5 grams of fresh feces, if of medium consistency. More or less should be taken if the specimen is very thin or very hard. If the stools are fluid, the bottle should be filled. The stool is moistened with water, with which it should be thoroughly mixed, and the bottle is completely filled with water, and the rubber stopper is inserted. The first of the twin tubes is then removed and is filled with water. The rest of the apparatus is inverted and this tube is stoppered by being placed in its correct position, and the entire apparatus is then turned back so that the twin tubes occupy the inverted position. The apparatus is then kept in the incubator at 37° C. for 24 hours. At the end of this time the height of column of water in the second twin tube is noted. The vessel in which the stool had been placed is opened and the reaction of the contents is taken with litmus.

Normal Findings.—Under ordinary conditions, little or no gas is found, and the reaction to litmus usually shows little change. It is distinctly abnormal if the last tube is filled more than one-half with water. An acid reaction to litmus and light color of the fecal mixture indicate carbohydrate fermentation. A dark color and alkaline reaction indicates putrefaction.

10. *Occult Blood.*

Precautions should be taken to exclude the presence of iron, blood derivatives, and chlorophyll which gives a positive reaction. The patient

should be placed on a special diet from which have been excluded all articles containing these substances. At the beginning of the diet a capsule of carmine should be given to mark the first stool which appears, as described under the "Fermentation Test."

A little of the stool may be rubbed up in a mortar with enough water to form a paste of moderate consistency. This may be treated exactly as is urine when the same test is applied (q. v.).

CHAPTER FIVE.

Examination of Spinal Fluid.

1. *Obtaining the Fluid.*

This procedure must be carried out under the strictest aseptic precautions. In performing a lumbar puncture the position of the patient is of the utmost importance. The most essential procedure is the preliminary arrangement of the patient, who should be on the extreme edge of the bed, lying on his right side, and an attempt should be made to have the lower back as nearly straight in both planes as possible. The knees should be drawn up so that the thighs are at right angles to the trunk. Care should be taken to have the patient's shoulders straight, that is, both shoulders should be at right angles to the surface of the bed, in order to prevent a sagging of the body and consequent delignment of the spine in the lumbar region. In stout women a small pillow placed in the curve between the crest of the ilium and the costal margin is of service.

The intervertebral space at the level of the iliac crest is the one usually selected for puncture. Sometimes the space immediately above this is somewhat easier to enter. The skin of the entire lumbar area is carefully sterilized and anaesthesia is produced by infiltrating the skin with 1/100 solution of novocain, which can be sterilized by boiling. This is also injected as deeply as possible into the tissues with a sharp fine needle attached to a sterile glass syringe.

For performing the puncture, the preferable form of needle is one supplied with an obturator which can be removed after the needle has been inserted, to prevent occlusion of the lumen by bits of tissue. The butt end of the needle should be ground to fit a metal slip joint connection by means of which a rubber connection can be attached if desired for pressure determination or for therapeutic injections. The amount withdrawn should not exceed 8 c.c. It is convenient to use a sterile graduated centrifuge tube for collecting the fluid, thus making certain of accuracy.

After the patient has been arranged in the position which has been described, the lumbar puncture needle is inserted in the midline toward the lower border of the intervertebral space selected. The needle should be kept at right angles to the body in both planes, when, if the patient is in the proper position, it should pass into the canal without touching bone in its course. If the space below the iliac crest is selected the point of the needle should be directed slightly toward the head. The needle should be inserted until its point is felt to just touch the anterior wall of the vertebral canal. Nearly all unsuccessful attempts with such a technic are due to a misdirection of the point of the needle downward, that is, to the right of the canal. If the fluid is not obtained, the needle should be partially withdrawn and the butt end depressed in order to raise the point of the needle, which on reinsertion usually reaches its desired destination.

Certain cautions should be borne in mind. When making a differential diagnosis, if brain tumor is suspected, much care should be exercised not to decompress too rapidly. In all instances the patient should be kept absolutely flat on the back or side in bed for at least 24 hours, and this means absolutely that the head should not be raised from the pillow for any purpose whatever.

2. *Characteristics of the Spinal Fluid.*

Once the fluid has been obtained it may be studied in the following ways:

- I. Gross appearance.
- II. Cytology.
- III. Chemistry.
- IV. Immune reactions.
- V. Bacteriology.

3. *Gross Appearance.*

a. *Color.*—Normal spinal fluid is colorless, and in the gross can not be distinguished from distilled water. Its specific gravity is given as 1.006 to 1.007.

b. *Turbidity.*—When turbidity is present, it is due to a high cellular or bacterial content. In most cases of cerebro-spinal lues, the fluid is clear, but when an active luetic meningitis exists and the cells are present in large numbers, distinct turbidity is seen.

4. *Cytology.*

A study of the cellular elements is of great assistance. The determination of the actual number of cells in each cubic millimeter is made most accurately according to the following method:

The hemocytometer pipette commonly used for enumerating red blood cells is employed. The staining fluid* is drawn to 0.7 mark and is then sucked up into the pipette to coat the walls of the bulb. Next the pipette is filled with freshly drawn spinal fluid to the mark 101, the mixture is thoroughly shaken, and is set aside for about 15 minutes. The proportion of stain is so small that it is neglected and the fluid is regarded as undiluted. At the end of this time the lymphocytes will have been sufficiently stained with the violet so that they can be readily counted with the aid of a counting chamber. The average of several fields, each 1 m.m. square, is determined and this is multiplied by ten to ascertain the number per c.m.m. In case red blood cells are present the reds and lymphocytes can be counted separately. One may then determine the number of leucocytes which would be expected with the mixture of the ascertained number of red cells and the lymphocyte count may be corrected accordingly.

Freshness of the spinal fluid is of great importance in cytological study. The lymphocytes disintegrate rather rapidly. Sometimes this is observed even during the process of counting. It is apparent that the count will be reduced considerably if it is not made very soon after the withdrawal of the fluid. This is a practical point worthy of note.

The normal count varies from 1 to 6.

Differential Count.—The fluid is centrifugalized for 15 or 20 minutes. The supernatant fluid is then withdrawn with a capillary pipette, and the residual drop is placed upon a slide. This drop is then dried, fixed and stained. The essential points in the technique are: the slow drying of the sediment in the air with no heat or at only a low heat and fixation with absolute methyl alcohol (allowing this to remain 2 minutes), avoiding the application of the flame. These precautions are necessary to prevent rapid drying of the cells, and consequent shrinking with distortion of the cell outline. Wright's stain may be employed. The more frequent types of cells are the small cells of lymphocytic type which occur in small numbers in normal fluids. In pathological fluids, this type of cell may be greatly increased, or large endothelial cells or polymorphonuclear neutrophilic leucocytes may be seen, depending upon the nature of the process.

*The staining fluid is prepared as follows: methyl violet, 5B, 0.1 gm., glacial acetic acid, 2.0 c.c., distilled water q. s. to 100.0 c.c.

5. Chemistry.

a. *Reduction of Fehling's solution*.—Normal spinal fluid contains a substance, presumably a sugar, which reduces Fehling's solution. It is absent in meningitis, but may be present in slight inflammatory conditions. Absence of reduction is of uncertain import. This test has little practical value.

b. *Albumin*.—Albumin is found in normal spinal fluid, but only in traces. An increased amount of albumin accompanies practically all inflammatory conditions.

Noguchi Butyric Acid Test.—0.2 c.c. of spinal fluid (free from blood) is mixed in a test-tube with 1.0 c.c. of 10% dilution of butyric acid in normal saline solution. This is heated to boiling, when 0.2 c.c. of normal sodium hydrate is added. Again the tube is heated to boiling, after which it is allowed to cool. Normally a slight opalescence is obtained. A distinctly granular or flocculent sediment indicates an increase in globulin.

An arbitrary standard for reading the Noguchi reaction has been suggested by Swift and Ellis:—

Negative: opalescent to very faint haze.

Plus-minus: faint haze to haze.

One plus: fine granular precipitate.

Two plus: heavy granular or coarse flocculent precipitate.

Three plus: very heavy flocculent precipitate.

Pandy's Test.—To about 1 c.c. of a saturated aqueous solution of carbolic acid is added one drop of spinal fluid. In the presence of globulin in abnormal quantities a bluish-white ring or cloud is formed immediately.

6. Lange Colloidal Gold Reaction.

Principle.—Normal spinal fluids will cause no change in properly prepared solutions of colloidal gold when suitably diluted with 0.4 per cent solution of sodium chloride, which is of the proper concentration to keep the protein in solution and too weak to cause flocculation. Abnormal fluids bring about partial or complete precipitation of the colloidal gold, producing color changes which may be graphically charted and are apparently specific for certain conditions.

Solutions Required—(1) Solution of colloidal gold, which must answer the following requirements:

a. It must be neutral on the day it is employed when tested with alizarin.

b. It must be absolutely transparent and of a brilliant orange red or salmon red color.

c. It must be "unprotected," that is, 5 c.c. should be completely precipitated in 1 hour by 1.7 c.c. of 1 per cent sodium chloride solution.

d. It should give a typical paretic curve with a known paretic spinal fluid.

e. It should give no more than a No. 1 reaction in any tube with a known normal spinal fluid.

(2) 0.4 per cent NaCl solution, sterile, prepared from C.P. NaCl and triply distilled water.

Preparation of Solutions.—This is a task requiring the utmost pains and patience. The directions given herewith should be followed implicitly. The chemicals must be weighed with extreme accuracy. Lack of attention to detail will only bring failure.

Apparatus Required.—

Jena, Pyrex, or Non-sol. beakers, capacity 500 c.c.

Jena, Pyrex, or Non-sol. beakers, capacity 1000 c.c. for making solution.

Jena, Pyrex, or Non-sol. Florence flasks, capacity 2000 c.c. for collecting water.

Graduates, 100 c.c. and 500 c.c.

Pipettes, two, 1 c.c., graduated in 1/100 c.c.

Pipettes, four, 5 c.c., graduated in 1/20 c.c.

Pipettes, four c.c., one mark only.

Pipettes, four, 10 c.c., graduated in 1/10 c.c.

Thermometer, of Jena glass.

Bunsen burner, tripod, wire gauze with asbestos center.

Copper still, tin-lined, with worm condenser of block-tin, including suitable supports and 4-tube Bunsen burner.

Thick walled lipless test-tubes, about $1\frac{1}{8}$ inch in diameter by 6 inches long.

Rack with 12 holes of size to receive the test-tubes specified.

Cleaning Glass-ware.—This is an essential step in the technic. Beakers, flasks, pipettes, and test-tubes, and graduates are heated first with a small amount of nitric acid, which is allowed to come in contact with the entire inner surface of the various vessels. This readily removes any precipitate. Tap water is then used copiously for rinsing, which is continued with 2 or 3 changes of once distilled water. The glass-ware is usually cleaned shortly previous to use and is allowed to remain moist with distilled water until just before use, when it is finally rinsed with a little triply-distilled water. The pipettes are drained by allowing them to stand upright on a piece of clean filter-paper.

Reagents Required.—(1). *Triply Distilled water.* By this we mean water which has been run through the still three times. When the first distillation has been completed, any water remaining in the boiler should be poured out, and the distilled water poured back in. The first 100 c.c. which distil over should be received in the same flask as was used in the first distillation, but after the collection of the amount it is used for rinsing the flask and is then discarded. The flask is cleaned in a similar way previous to the third distillation. Throughout only this one flask is used for the collection of the water.

This water is to be used in preparing all of the solutions hereinafter enumerated.

(2) *Gold solution.*—Gold chloride, Merck's yellow crystals, 1 gm.

Water, triply distilled, up to 100 c.c.

This solution should be kept in a dark glass stoppered bottle away from the light. When this precaution is observed, it keeps for some time.

(3) *Potassium carbonate solution.*—Potassium carbonate (desiccated) (Merck's Blue Label), 2 gms.

Water, triply distilled, up to 100 c.c.

This solution must be made up immediately before use.

(4) *Formaldehyde solution.*—Formaldehyde (Merck's 40 per cent solution, highest purity, 1c.c.

Water, triple distilled, up to 40 c.c.

We have found it advisable to preserve the neutral reaction of the formaldehyde by placing powdered marble dust in the bottom of the bottle. This is shaken occasionally and is, of course, allowed to settle before use. This solution must be freshly prepared.

(5) *Oxalic acid solution.*

Oxalic acid (Merck's Blue Label, crystals), 1 gm.

Water, triply distilled, up to 100 c.c.

This solution must be freshly prepared.

Preparation of the Colloidal Gold Solution.—In a beaker heat 1000 c.c. of triply distilled water, using a good Bunsen flame, and protecting the beaker with asbestos-filled iron gauze.

When the temperature reaches 60° C., add 10 c.c. of the gold chloride solution and 7 c.c. of the potassium carbonate solution.

At 80° C., stir the solution and add 10 drops of the oxalic solution.

At 90° C., add the formaldehyde solution. About 5 c.c. is usually required, but it should be added slowly, drop by drop, and only enough should be used to produce the initial pink color. The flame should be reduced to a point sufficient to keep the temperature at 90° C. until the color change appears, when it may be removed.

If satisfactory, the solution should correspond to the standards previously described. The gross appearance is helpful. A yellowish shimmer indicates an unsatisfactory solution. The solution should be transparent. Indeed, if a beaker containing 3 inches of solution is placed over a book page one should be able to read ordinary type through the solution.

Procedure of the reaction.—Only uninfected, blood-free spinal fluids should be used for making the test.

Eleven test tubes should be set up in a rack. In the first tube place 1.8 c.c. of 0.4 per cent NaCl solution and 0.2 c.c. of the spinal fluid to be tested. In each of the remaining tubes put 1 c.c. of 0.4 per cent NaCl. Mix the contents of the first tube well and transfer 1 c.c. of the mixture to the second tube. Mix this, and with the same pipette take 1 c.c. and put in the third tube. Continue this with each tube up to and including the tenth. When the contents of this tube has been mixed, withdraw 1 c.c. and discard it. The eleventh tube, containing only 0.4 per cent NaCl solution and no spinal fluid, serves as a control. Now add to each tube 5 c.c. of the colloidal gold solution. Shake each tube separately and well. Set the rack aside, and take readings in 30 minutes and again in 24 hours.

Readings.—In making the readings, each tube is given a number on a scale of 5 according to the extent of the color change. The following is the scale:

Colorless	5
Almost colorless, but a tinge of blue.....	4
Blue	3
Lilac or purple	2
Reddish blue	1
Original salmon-red (unchanged)	0

The readings are then recorded in the order in which the respective tubes stand: e. g., 5, 5, 5, 5, 4, 3, 2, 1, 0, 0.

A curve may be constructed on a chart.

Normal Findings.—The change should not exceed this result: 1, 1, 1, 1, 1, 1, 0, 0, 0, 0.

A paretic curve would be: 5, 5, 5, 5, 4, 2, 1, 0, 0, 0.

A curve which is said to fall within the "luetetic zone" would be: 0, 1, 3, 3, 1, 0, 0, 0, 0, 0.

A curve is referred to as falling within the "meningitic zone" when the reading is: 0, 0, 0, 1, 3, 4, 4, 2, 0, 0.

7. Immune Reactions.

In the diagnosis of central nervous system affections, the Wassermann reaction is of great aid. Its technic cannot be described here.

8. Bacteriology.

The fluid should have been drawn into a sterile test-tube. When a bacterial infection is suspected, it is wise to withdraw a small quantity of the fluid with a sterile pipette and place it in a separate tube. This fraction can be used for the enumeration of the cells, globulin test, and to make a slide for a differential count and a preliminary search for bacteria. The major portion of the fluid should then be placed in the incubator and kept at 37° C. for about 24 hours when cultures may be made from it and when smears may be made for staining.

a. Pneumococci and Meningococci.—In both infections the fluid is usually at least turbid and more often purulent. Smears should be made from the fresh fluid and from the fluid which has been incubated 24 hours. These should be stained with methylene or toluidin blue, with a capsule stain, and with Gram's stain.

b. Tuberculosis.—The fluid should be allowed to stand at 37° C. for about 24 hours, at the end of which time a fibrin clot will have formed and attached to the sides and bottom of the tube. In the meshes of the clot the

tubercle bacilli are usually entangled. This is withdrawn with a sterile platinum wire, is teased out on a slide, dried, fixed with heat, and stained for tubercle bacilli in the usual manner.

A variation in technic which is distinctly worth while is to pour the spinal fluid into a sterile short graduate or into a small sterile Stender dish. The vessel must be large enough to permit a coverslip to rest flat in the bottom. The fluid is allowed to stand in the incubator for about 24 hours. The coverslip is then removed from the bottom of the container by lifting it up with a platinum wire bent to form a wide loop. This loop is slipped under the coverslip and the coverslip is raised without tilting it, keeping it in a horizontal plane. The fibrin clot will adhere to its upper surface, and will not require teasing out. After drying and fixing, it may be stained in the usual way.

9. *Differentiation of Various Conditions.*

The following findings are the typical ones. It should be remembered that none of them are constantly present and often only one or more will be present, even in cases where the clinical diagnosis is unquestionable.

Cell-count.—Increased cell-count is found in any active meningitis.

Globulin.—Increased globulin is due to transudation from vessels of the central nervous system. It may be seen in tumors of cord or brain, of bony canal, or of meninges, in arteriosclerosis, or any inflammatory condition of central nervous system.

Wassermann reaction.—Only found in spinal fluid when a syphilitic process of central nervous system is present.

Lange Colloidal Gold Curve.—The findings are summarized under Section 6.

10. *Characteristic Findings.*

Tuberculous Meningitis.—Fluid is usually absolutely clear and under increased pressure. Globulin is increased, cell count high, differential count of cells usually shows predominance of lymphocytes, though this is not invariable, the polynuclears being occasionally in the majority, especially in the early stages tubercle bacilli may be found.

Syphilitic Infections (paresis, tabes dorsalis, syphilitic meningo-endarteritis).—The blood Wassermann reaction is often positive. This is not constant and a negative Wassermann reaction in the blood does not exclude syphilis in the nervous system. The spinal fluid is usually clear. It may be under slightly increased pressure. Usually the Wassermann reaction in the spinal fluid is positive, the cell count is increased, the globulin is in excess of normal. The Lange colloidal gold curve is helpful in differentiating between these conditions.

Anterior poliomyelitis.—The fluid may be clear, slightly hazy, or even flocculent. The cells are usually increased, the range being from 0 to 2000 per c.m.m., and the globulin varies from a negative to a +++ reaction, the characteristics of the fluid depending to some extent upon the severity of the process. The differential count usually shows above 50 per cent polymorphonuclears in the early stage, while later there are usually 90 per cent or more mononuclears.

Other Infections.—The fluid is usually purulent and in some cases is thick pus. With any acute infection, the globulin is increased and the cell count high. Excepting that caused by tubercle, the differential count usually shows a vast majority (90 per cent or over) of polynuclear cells. If the infection becomes chronic the mononuclears are apt to become more numerous, and may predominate over the polynuclears. The determination of the form of meningitis rests upon detection of the inciting organism. The more frequent invaders are, the micrococcus intracellularis meningitidis and the pneumococcus. Others are staphylococci, streptococci, the colon bacillus, the influenza bacillus, etc.

CHAPTER SIX.

Examination of Exudates and General Bacteriological Methods.

1. *Examination of Pus.*

Smears should be made on slides and stained with Loeffler's methylene blue and Gram's stain. Further procedures should be carried out as indicated by the findings.

2. *Examination of Nose and Throat Cultures.*

If diphtheria is suspected, inoculate a tube of Loeffler's blood serum and place in the incubator, keeping at 37°. This should be examined as described below at the end of 18 hours, 24 hours, and 48 hours. The swab is then smeared over the surface of a slide and is stained and examined at once.

When cultures are taken in suspected cases of diphtheria, it is well to introduce one swab into the nose, to pass a second one over the tonsils and pharynx, and to take a third one from the vicinity of the larynx. The taking of a laryngeal one will be facilitated by bending the swab wire into the curve of an ordinary laryngeal applicator.

3. *Examination of Urethral and Vaginal Swabs.*

Diplococcus Gonorrhoeae.—Smears should be made on two slides. One slide should be stained with methylene blue for 1 minute, and the other with Gram's stain.

4. *Diphtheria.*

Cultures should be made on Loeffler's blood serum. In children, curve the wire carrying the swab and take cultures from the larynx as well as from the tonsils. As soon as the cultures have been made, smear the swab on a slide and stain for diphtheria. Keep the culture at 37° C. and examine at the end of 18 hours, 24 hours, and 48 hours.

Staining.—The simplest method is to make an emulsion of the bacteria with water by rubbing on the slide with a platinum loop. Dry slowly and fix in the naked flame. Stain with Loeffler's alkaline methylene blue for about 1 to 3 minutes. Pour off the stain and decolorize with 0.5% acetic acid until the smear appears grayish blue. Wash in water, blot and dry. The diphtheria bacilli stained in this way appear as light blue, almost colorless rods, containing dark blue polar bodies or characteristic cross-bars, depending upon the age of the cultures.

Neisser's method: offers no advantage to our mind. Prepare a smear on a slide as before and stain with Neisser's methylene blue for about 3 seconds. (Methylene blue, Grubler, 1 gram; alcohol, 98%, 20 c.c., glacial acetic acid, 50 c.c.; water, 950 c.c.) Then wash in water and stain with a 0.2% watery solution of Bismarck brown for 3 to 5 seconds. The bodies appear brown and the polar granules blue.

5. *Vincent's Angina.*

Scape the lesion with a dull curette or a stiff platinum wire in order to remove a portion of the membrane. Place this on a slide. Moisten with a little normal NaCl solution if dry. Spread well, dry, and fix with heat. It is better to make two preparations and to stain one with Gram's stain and the other with 1/10 carbol-fuchsin for 10 minutes. The diagnosis must be made on the morphological and staining characteristics.

6. *Tubercle Bacillus.*

See section on Sputum, Urine and Feces.

7. *Pneumococcus.*

See section on Sputum.

8. *Influenza Bacillus.*

See section on Sputum.

9. *Gram's Stain.*

Preparation of the stain.—Anilin gentian-violet solution. Keeps for a few days only and usually has to be made up freshly. Shake 1 c.c. anilin oil thoroughly with 25 c.c. of distilled water. Filter through a moistened filter paper. To 18 c.c. of clear filtrate add 2 c.c. of a saturated alcoholic solution of gentian violet.

Staining: Stain slide $1\frac{1}{2}$ minutes with anilin-water gentian violet. Pour off and wash slide with Lugol's solution, allowing some to stand on slide $1\frac{1}{2}$ minutes. Wash with water, and immerse in absolute alcohol 10 minutes. Counter-stain with 0.2% watery solution of Bismarck brown or 1/10 carbol-fuchsin, freshly prepared by diluting 1 part of carbol-fuchsin with 9 parts of water.

Classification of important pathogenic bacteria according to Gram's stain:
Gram Positive. (Retain the violet color.)

Bacillus anthracis.	Bacillus diphtheriae.
Micrococcus pyogenes aureus.	Bacillus tetanus.
Micrococcus pyogenes albus.	Bacillus tuberculosis and other acid fast bacilli.
Streptococcus pyogenes.	
Pneumococcus.	Bacillus aerogenes capsulatus.
Bacillus subtilis	

Gram Negative. (Lose the violet color and take the counterstain.)

Meningococcus.	Bacillus typhosus.
Gonococcus.	Bacillus paratyphosus.
Micrococcus catarrhalis.	Bacillus influenzae.
Bacillus coli.	Bacillus mucosus capsulatus.

10. *Spirochaeta Pallidum.*

Obtaining "irritation serum" for examination: It is well to have the patient in the recumbent posture. The lesion is thoroughly cleansed with physiological salt solution (0.9% NaCl). This is done by washing the lesion with pledgets of cotton on the ends of toothpicks or wooden applicators. Clean out the central soft part and then with a dull curette undermine the lesion, gently scraping away until blood begins to ooze. It is useless to examine a lesion which has recently been treated with caustics or strong antiseptics. Apply a suction cup. This is made from a piece of glass tubing, with a bore approximately the diameter of the index finger. The tube should be about four inches long and have stout small rubber bulb on one end. These bulbs may be obtained from stationers who sell them for cleaning fountain pens. When the blood is oozing freely, remove the cup. Wait until the blood flow ceases and shortly the clear "irritation" fluid will exude. Transfer drops of this serum with a platinum loop to an absolutely clean dry coverslip. Examine at once, while fluid, with the dark field illuminator or stain with Giemsa stain.

Setting up the dark field illuminator: Into the upper segment of the oil-immersion objective, insert the small, conical, metallic "funnel stop." Replace the lens bearing portion of the oil-immersion objective. Swing on the Abbe condenser. Place on microscope stage the special Leitz "Dark Field Illuminator." Place a drop of oil on the crystal of the illuminator. Turn on the arc light and reflect with the flat mirror. Pull out draw tube to proper correction length. Outline on a flat slide a square with immersion oil. Lay on coverslip, prepared as described above, "battered side" down, so that the serum will be within the oily square and between the slide and coverslip. Place slide in position, put on a drop of immersion-oil and examine. Focus carefully with the oil-immersion lens. It is better to watch from the side and lower the lens into the oil and then focus by moving the

lens upwards. Focus on the red blood cells which may be present. *Spirochaeta pallidae* will appear as white, active, tightly curled organisms "swimming" against a dark background.

Giemsa Stain for Spirochaetae pallidae: Allow the "irritation-serum" to dry in the air. Fix by dropping on methyl alcohol (Merck's H. P.) and leave for 2 to 3 minutes. Into a shallow glass dish with a ground glass cover mix 10 c.c. distilled water, 10 drops Giemsa stain, and 1 drop 1% solution potassium carbonate. Bend a platinum wire into a broad loop at right angles to the glass rod. Support the coverslip on the wire loop and carefully float the coverslip on the surface of the stain, "butter side" down. Cover the dish and allow it to stand for 18 to 24 hours. Remove the coverslip with the platinum loop. Wash carefully, but do not blot. Dry in the air, mount in balsam and examine. *Spirochaetes* stain dark red or purple.

Preparation of Autogenous Vaccines.

11. *Preparation of the Emulsion.*

The organisms are isolated and obtained in pure culture in the usual way. This should be accomplished as rapidly as possible. When a pure culture is obtained, several tubes of solid media should be planted, selecting a type of media most suitable for the growth of the organism. The cultures are allowed to grow for 24 hours at 37° C., when the tubes are filled with sufficient sterile salt solution (0.9%) to entirely submerge the slanted media. A platinum wire, mounted on a glass rod, is bent into a wide loop. This is sterilized in the Bunsen flame. After it has cooled, it is used to scrape the bacterial growth off the slanted media and to mix it with the salt solution. The bacterial emulsion thus prepared is poured from all the tubes into a dry sterile test-tube or bottle, containing a few bits of broken glass. The ends of the tubes should be passed through the flame just before the emulsion is poured out, in order to avoid contaminating the emulsion. If a test-tube is used, it should be hermetically sealed with a blow pipe, while a bottle may be stoppered with a sterile rubber stopper or tight-fitting glass stopper. The emulsion is then shaken vigorously for 15 to 20 minutes. A shaking machine expedites this part of the preparatory labor. The vaccine is now ready for counting.

Standardization according to a modified Wright's method:

The worker should provide himself with a capillary pipette the capillary portion of which should be at least six inches long and of fairly uniform bore. A mark is made at the capillary portion of the pipette about 2.5 cm. from the end with ink or a grease pencil and the larger end of the pipette is fitted with a rubber nipple. Such a pipette may be readily drawn from a piece of glass tubing.

The vaccine should be thoroughly shaken before counting. Two or three drops of well-shaken emulsion are placed in a watch-crystal. The worker then pricks his finger and allows a drop of blood to fall on a slide. This blood is drawn up into the pipette to the mark. After having thus measured off a quantity of blood, a very slight amount of suction is employed to draw the column of blood up the pipette so that its base will occupy a position about 5 m.m. above the tip of the pipette, and the bacterial emulsion is drawn up to the mark. In the pipette there now should be a column of blood and a column of bacterial emulsion of equal height separated by an air space about 5 m.m. long. The contents of the pipette are carefully ejected onto a clean slide and are then drawn back and forth into and out of the pipette three or four times to mix the blood and the organisms thoroughly. It is desirable to avoid the admixture of air bubbles. The drop is then spread out on the slide in the manner described for making blood smears, and is stained with Wright's stain. After staining, it is "counted." By this we mean that in a number of different fields, selected at random, we count the number of red blood cells and the number of organisms to determine the ratio in which they are present. At least 1,000 red cells should be counted in different areas of the slide. The preparation should be discarded

and another made if the bacteria prove to be unevenly distributed. In making the count, an Ehrlich's ocular is of the utmost convenience, since the visible field may be greatly reduced, making the operation of counting much less trying. If this instrument is not available, a make-shift may be readily constructed by cutting a circular piece of paper to rest on the platform which is found in between the upper and lower lenses of all oculars, and by making a tiny hole in center.

Calculation.—We assume that the worker's blood is normal and contains five million red blood corpuscles per c.m.m. We have taken equal quantities of blood and bacteria suspension. The number per c.m.m. is computed by use of this equation, in which A=the number of bacteria counted, B=the number of corpuscles counted, and X represents the number of organisms per c.m.m.:—

$$\frac{5,000,000 \times A}{B} = X$$

Standardization according to Hopkins' method:

The writer such prefers Hopkins' method. It requires, however, a rapid centrifuge and specially graduated centrifuge tubes (Hopkins' tube).*

The bacterial emulsion is prepared as directed in the preceding method and is poured into the Hopkin's tube. The tube is now centrifugalized for 30 minutes at a rate of 2,800 revolutions per second in a centrifuge whose head has a diameter of 18 cm. from the tip of one tube to the tip of the other. When the stated time has expired, the supernatant salt is removed carefully and sufficient bacteria are withdrawn to reduce the top of the sediment to the mark desired. If the mark is .05, fresh salt solution may be added to the mark 1.0 and a one-half of one per cent dilution is obtained. If the bacterial sediment comes up to the mark .1 and salt solution is added to the mark 5, we have a 2% dilution. Hopkins has worked out painstakingly a table showing the number of bacteria represented in a 1% dilution by the different forms. This we reproduce here. When the salt has been added to make an emulsion of the desired strength, the vaccine is poured in a sterile bottle or test-tube and is ready for sterilization.

	Per cent	Billion per c.c.
Staphylococcus aureus and albus.....	1	10.0
Streptococcus haemolyticus	1	8.0
Gonococcus	1	8.0
Pneumococcus	1	2.5
Bacillus typhosus	1	8.0
Bacillus coli	1	4.0

Sterilization of the Vaccine:

The bottle or tube containing the vaccine is placed in a water bath, and the water is kept at a temperature of 65° C. for one hour. At the end of that time, cultures are made from the presumably sterile vaccine on two or more tubes of the same sort of media as was employed for growing the cultures. These cultures are allowed to incubate at least 24 hours. If they prove to be sterile, the vaccine may be employed.

Dilution and Preservation of Vaccines:

If the sterilized suspension was of greater strength than is desired for administration, the vaccine should be so diluted with sterile salt solution as to make 0.1 c.c. of the dilution contain the initial dose. Suppose, for example, that the sterilized and standardized emulsion is found to contain 500,000,000 bacteria per c.c., and that the desired initial dose, which we wish to have in bulk of 0.1 c.c., is 50,000,000, we would take 1 c.c. of the emulsion and add 9 c.c. of sterile salt solution.

Lysol or tricresol is added as a preservative, 3 drops being added with a sterile dropper to each 10 c.c. of completed vaccine.

*These may be obtained from the International Instrument Co., Cambridge, Mass.

CHAPTER SEVEN.

Examination of the Blood.

1. *Obtaining Blood for Examination.*

For counting corpuscles, hemoglobin estimations, etc.

When only a few drops of blood are required it may be obtained by simple puncture of the skin. A triangle is best adapted for this purpose, but in case of emergency a clean steel pen may be utilized by breaking off one nib. The instrument may be sterilized by dipping the point in alcohol. For puncture in adults the fleshy part of the ear lobe or the tip of the finger may be used, while with infants and young children it is better to use the great toe or the heel. The skin should be prepared by rubbing with alcohol. This is allowed to dry and hyperaemia should be allowed to subside. After puncture the drop should be obtained with the slightest pressure possible and care should be taken that the drop is not diluted with tissue juices, as would be the case if the skin were squeezed.

2. *Determination of Hemoglobin.**Comparison of Methods.*

For general utility Sahli's instrument is the method of choice. It is accurate. The cost is much less than that of the Dare or v. Fleischl instrument. It is available under all circumstances. Either daylight or artificial light may be employed. Haldane's method would be preferable were artificial illuminating gas always obtainable. Both of these methods have the advantage of using as the standard of comparison a solution of a hemoglobin derivative.

The Talqvist book is convenient, but, as the scales are now printed, is quite inaccurate, especially when the reading falls below 50 or 60%.

Sahli's Method.—First shake well the hermetically sealed standard tube containing the solution of acid hematin. Be sure that the graduated tube and the pipette are clean and are thoroughly dry. With the dropper put decinormal HCl in the graduated tube to the mark 10. With the pipette draw up blood to the mark 20 c.m.m. Any blood on the outside of the pipette should be wiped off. Eject the blood into the acid in the graduated tube and mix by drawing the mixture back and forth in the pipette. Allow this to stand one minute, then add distilled water until the color matches that in the standard tube when the two tubes held in the black frame are viewed by light transmitted through the ground-glass background. The height of the fluid in the graduated tube is now read off on the scale and the percentage of hemoglobin is secured by computing according to the equation furnished with each instrument.

The apparatus should be cleaned carefully after use in the following way. Empty the blood mixture from the graduated tube, then rinse with distilled water, alcohol and ether. Clean the pipette in the same fashion. Before using, always be certain that both graduated tube and pipette are absolutely clean and dry.

Renewal of Standard Solution.—When the standard solution deteriorates, as it will do after a period of months, it should be replaced by fresh fluid. We have found the following method a workable one. The end of the tube is broken off after making a deep nick with a sharp file. The tube is then washed thoroughly with distilled water and is sterilized by dry heat. Fresh solution is prepared according to the following formula:

Normal human blood.....	½ c.c.
N/10 hydrochloric acid.....	5 c.c.
Distilled water	25 c.c.
Mix, and add glycerin.....	25 c.c.

The human blood is obtained by puncturing a vein of a normal adult with a cell count of 5,000,000, using a dry sterile Luer syringe. The n/10 HCl, distilled water, and glycerin are sterilized by boiling separately in a flask. They are cooled before mixing. All glassware should be sterilized by dry heat. While the amount of the mixture given above is considerably in excess of what is required for filling one standard tube, the use of larger quantities is desirable, since it is conducive to accuracy. When the solution has been prepared, the required amount is placed in the standard tube. This may be sealed by inserting a small sterile cork, dipped in boiling paraffin, pushing it in below the top of the tube over the cork.

It is possible to secure new tubes* and to seal them in a flame, but we have found that it is difficult to obtain tubes of exactly the same bore as the calibrated tubes, so it seems better to make the standard tube furnished with the instrument last as long as possible.

When working with a standard tube prepared in this way, the percentage may be read directly from the graduated tube after the patient's blood has been diluted to match the standard.

N/10 hydrochloric acid may be obtained which will be sufficiently accurate for this purpose by adding to 11.7 c.c. of HCl (C. P., U. S. P. VIII) sufficient distilled water to bring the volume up to 1,000 c.c.

Tallqvist hemoglobinometer.—This consists of a book of absorbent papers and a scale of colors lithographed on paper, the values ranging from 10 to 100 per cent. A drop of blood is absorbed by a bit of the absorbent paper furnished in the book and when the superficial moisture has disappeared the drop is compared with the scale of colors by moving it under the perforations in the color scale. The color which matches is taken as indicating the percentage. The absorbed drop of blood should be large enough to entirely fill the perforations.

This method is quite inaccurate, for there is a great variation in the color scales. The scale is especially misleading with anemic bloods, and the information it furnishes for computing the color index in such instances is worse than useless.

The Dare hemoglobinometer.—The instrument is quite costly and easily broken. There is the additional disadvantage that the color scale is not prepared from hemoglobin derivatives (as it is with the Sahli instrument), but is colored glass. Undiluted blood is obtained by allowing it to run into the receiver. This is formed by two rectangular pieces of glass, which are held together in a metal receptacle with a set-screw. The square space should be entirely filled with blood, and the receiver is then slipped into its place in the instrument, when it is viewed against a dark background with transmitted candle light through the eye-piece. The scale is rotated with the thumb screw until the colors of the blood and scale match, when the percentage may be read from the wheel.

3. *Determination of Specific Gravity of the Blood.*

In a clean and dry glass urinometer cylinder prepare a mixture of chloroform and benzol in such proportions that the specific gravity will be 1.050 to 1.060. Prick the patient's finger and allow a moderate sized drop of blood to fall directly into the chloroform-benzol mixture. The drop must not be too large, otherwise it will separate and will cause confusion. If the drop falls to the bottom of the cylinder, it is apparent that the specific gravity of the mixture is too low, so chloroform should be added drop by drop. When the drop floats on the top, the mixture is too heavy and benzol should be added. In this case add enough benzol to cause the drop to sink to the bottom, then drop in chloroform gradually. When the specific gravity of the mixture is the same as that of the blood, the drop will be suspended near

*Eimer & Amend Co., New York City, or Steele Glass Co., Philadelphia, Pa.

the center of the liquid column. Then the mixture may be filtered and its specific gravity determined by hydrometer.

Specific gravity according to:

Hammerschlag.	Hemoglobin.
1.033 to 1.035	25 to 30 per cent.
1.035 to 1.038	30 to 35 " "
1.038 to 1.040	35 to 40 " "
1.040 to 1.045	40 to 45 " "
1.045 to 1.048	45 to 55 " "
1.048 to 1.050	55 to 65 " "
1.050 to 1.053	65 to 70 " "
1.053 to 1.055	70 to 75 " "
1.055 to 1.057	75 to 85 " "
1.057 to 1.060	85 to 95 " "

4. Enumeration of the Blood Corpuscles.

Apparatus required:

Hemocytometer.

Six one ounce bottles containing:

1. Distilled water.
2. Alcohol.
3. Ether.
4. Dilute acetic acid 0.5%.
5. Toison's solution.
6. An empty bottle into which the Toison's may be filtered.

Small glass funnel.

Filter paper.

Squares of gauze or clean handkerchief.

Blood lancet.

Camel's hair brush.

The instrument of preference for the enumeration of the corpuscles is the Tuerck pattern and the manufacture should be that of Zeiss or Leitz.

At the present time foreign made instruments are practically unobtainable. American manufacturers are supplying the market, however, and the U. S. Bureau of Weights and Measures standardizes the pipettes and chambers.

In using the chambers ruled according to the Tuerck's method, a count should never be based upon the figures obtained from a single preparation, no matter how many squares are counted. Counts should be made from at least two preparations, so that should an error be made in one preparation it would be detected in the other.

The Blood-counting Apparatus.—This consists of two pipettes for diluting the blood, a counting chamber, and an accurately ground coverslip. The pipette used for enumeration of red blood cells has ten marks on the stem, the fifth marked 0.5 and the tenth 1. Above the bulb is the mark 101. When blood is drawn to the 0.5 mark and diluting fluid to the 101 mark, the dilution is 1 to 200; while it is apparent that with blood drawn to the 1 mark and dilution drawn to the 101 mark, the dilution is 1 to 100.

The pipette used for enumerating white cells likewise has ten marks on the stem, the fifth marked 0.5 and the tenth 1, but above the bulb is the mark 11. When the blood is drawn to 0.5 mark and dilution fluid to 11 mark, the dilution is 1 to 20; while with blood drawn to the 1 mark and diluting fluid to the 10 mark, the dilution is 1 to 11.

The counting chamber is a thick glass slide at the center of which is cemented a small circular platform. The surface of this platform is subdivided by small rulings, which will be described later. Around the platform is a "moat" or "ditch," separating it from a surrounding "wall" of glass, whose inner border is circular and whose outer border is rectangular. The height of the surrounding "wall" is exactly 1/10 m.m. greater than the

height of the central platform or disc, so that when the coverslip is placed on the "wall," there is a space between the coverslip and the circular platform just $1/10$ m.m. deep.

With the Thoma ruling, there will be found ruled on the surface of the circular platform twenty columns running horizontally and twenty running vertically, each $1/20$ m.m. wide. It is evident that when a drop of fluid placed on the platform is covered by a coverslip, the capacity of the space formed by each tiny square as a base is $1/400$ c.m.m. The first, sixth, eleventh, and sixteenth horizontal and vertical columns are subdivided by a median line. This line simply serves as a guide or landmark. The total area covered by the Thoma ruling is one square millimeter.

The Turck ruling differs from the Thoma in that the total area covered by the ruling is nine square millimeters. The central square is ruled exactly as is the Thoma chamber. The eight other squares are ruled differently and are used only in enumerating the white corpuscles.

5. *The Enumeration of Red Blood Corpuscles.*

Toison's fluid is used as a diluent in counting red blood cells. The formula is:

Methyl violet, 5 B.....	.025	gram
Sodium chloride	1	gram
Sodium sulphate	8	grams
Glycerin	30	c.c.
Aq. dest.	160	c.c.

A mold grows in the fluid with great readiness, and as the spores might be mistaken for red blood cells, it should always be filtered before use.

Procedure:

Obtaining Blood and Making the Dilution.

Precautions:

1. See that the pipette is thoroughly clean and dry and be sure the glass bead in the bulb of the pipette may be rattled about freely.
2. Use only freshly filtered Toison's solution.
3. Have ready for use the pipette with the mark 101.

Obtain a drop of blood according to the previous directions. Hold the pipette almost horizontal and with gentle suction draw blood to the mark 0.5. If there is blood on the outside of the pipette, wipe it off with a piece of gauze. If blood is drawn to the mark above the five, correct the final count by dividing by 6 and multiplying by 5. Should the column of blood rise only a slight distance above the 0.5 mark, draw it back by touching the tip of the pipette with a piece of gauze. Now suck up Toison's fluid to the mark 101, meanwhile rotating the pipette so that the glass bead will be kept in motion. When the pipette has been filled, put the thumb over one end of the pipette and the finger over the other and shake vigorously.

If it is desired to take the pipette to another place to make the count (*e. g.*, from patient's home to the physician's office), place the finger over the top of the pipette to seal it, then pull the capillary rubber tube down to close off the upper end of the pipette and bind the rubber tubing to the upper portion of the pipette by means of a small rubber band. This will prevent the fluid from running out if the pipette is carried in a horizontal position.

Cleaning the pipettes.

Great care must be exercised in cleaning the pipettes. Immediately after use the fluid should be ejected. They should be filled with water and emptied, and then treated successively in the same way with alcohol and with ether. The last bit of ether should be inhaled, since if it is blown out the moisture of the breath will gain access to the pipette. If cleaning has been well done, the bead will rattle about readily and no moisture will be apparent.

Occasionally blood is coagulated in the pipette, due to slow handling or to drawing up alcohol instead of one of the diluting fluids (a favorite slip with students). A bristle or fine wire will have to be run into the lumen with much care, and when a passage has been cleared, nitric acid may be drawn in. If left standing over night, the pipette can usually be cleaned with numerous changes of nitric acid.

Counting.

When ready to count, clean the chamber and the glass coverslip thoroughly. Never employ xylol, alcohol, ether, or hot water on the chamber as the "wall" and the "platform" are cemented to the glass slide and are readily loosened by these solvents. Use only gauze, a clean handkerchief, or Japanese lens paper with either cold water or the moisture from the breath. It is difficult to get rid of bits of lint, unless one uses a camel's hair brush. It is absolutely necessary to have no grains of dust, grit, or lint on the "wall" or coverslip. Any foreign body in this place would by raising the coverslip increase the distance between the coverslip and the circular platform and so increase the number of corpuscles.

It is the writer's practice to clean the slide and coverslip as directed here and then to place the coverslip on the slide in the position that it will occupy when the preparation is completed. Then Newton's rings should be looked for. They should appear as concentric, vari-colored rings between the coverslip and the "wall" of the chamber when the slightest pressure is made on the upper surface of the coverslip. Their presence indicates that the two highly polished surfaces are in perfect apposition. When any particles of lint or foreign substance come between the cover-glass and the "wall" it will be impossible to demonstrate them. The coverslip is left in place until the pipette has been shaken, when it is lifted only long enough to put the drop in place.

The size of the drop to be placed on the circular platform can be learned only after repeated trials. With the cover-glass in position, it must be large enough to cover practically all of the platform, but it must not run into the moat. The cover-glass should be placed in position at once. It should not be dropped on carelessly, since in this way bubbles will be included, but with one edge resting firmly in a diagonal position across the "wall," braced against the thumbs, the opposite edge is lowered gently into position with the forefingers. If the drop appears to be satisfactory, ascertain whether Newton's rings are present. If they cannot be demonstrated, the preparation must be discarded.

A preparation should not be counted unless it fulfills the following requirements:

1. It should cover all or practically all over the circular platform.
2. It must not overflow into the moat.
3. No bubbles should be included in the drop.
4. Newton's rings must be demonstrated.

After preparing a satisfactory drop, it should be allowed to stand for about 10 minutes, so that the corpuscles may settle. The area for counting should be located with IV ocular and the 3 objective (Leitz), and then the count should be made with the same ocular and the 6 objective. Our method of counting is to enumerate the number of cells in the four corner blocks—each block containing 25 small squares. One such block is contained in the field when the IV ocular and 6 objective are used. This is to be repeated on a second preparation. We have found that counting is much simplified for students if they prepare a diagram of the blocks to be counted and note in each square on the diagram the number of cells seen in the corresponding square of the chamber. The total cells in each block of 25 squares is ascertained. The total number of cells in 8 blocks of 25 squares each is multiplied by 2 to find the number per square m.m., then by 10 to find the number per cubic m.m., since the chamber is only $\frac{1}{10}$ m.m. deep, and finally by 100 or 200, according to the dilution which was made.

Example :

First preparation—

Upper right hand block	146
Upper left hand block	140
Lower right hand block	155
Upper right hand block	147

Total	588
-------------	-----

Second preparation—

Upper right hand block.....	143
Upper left hand block	141
Lower right hand block.....	155
Upper right hand block	139

Total	578
-------------	-----

Total for 8 blocks of 25 squares each = 1166.

Cells per square millimeter = 2332.

Multiply by 10 for depth of chamber = 23320.

Multiply by 200 since blood was drawn to 0.5 mark in pipette = 4,664,000.

Criterion for Judging Accuracy in Counting.

The difference between the largest and the least number of cells found in a block of 25 small squares should not exceed 25. A greater difference is evidence that the preparations are not evenly spread.

6. *Enumeration of the White Blood Corpuscles.*

0.5% acetic acid is used, since this lyses the red blood cells and intensifies the nuclei of the white cells. Dilute acetic acid may be prepared for this purpose by adding 5 drops of glacial acetic acid to 30 c.c. of distilled water. It should be freshly prepared.

The blood is obtained as usual. A large drop will be needed. Draw this to the mark 0.5 and then fill the pipette to the mark 11, with dilute acetic acid. Unusual care will have to be taken to make accurate dilutions with the white pipette. The preparation on the counting chamber is made in the manner already described under "Enumeration of Red Blood Corpuscles."

This may be done with the IV ocular and the 1/3 objective. The number of cells in an entire square millimeter are determined.

In using the Tuerck ruling, at least 5 square millimeters should be counted on each of two preparations, and the average taken.

Computation.

The average number of cells per square millimeter is multiplied by 10, since the chamber is only 1/10 m.m. deep, and by 20, since the dilution was 1 : 20.

Example: Suppose that the average number of cells per square millimeter is 37.25, then multiplying by 10 for the depth and 20 for the dilution, the result would be 7450 per c.m.m.

7. *The Color Index.*

The color index is an expression of the hemoglobin content of the red blood cells as compared with the normal. It is determined by dividing the percentage of hemoglobin by the percentage of R.B.Cs., and may be graphically represented by the fraction %Hb/%RBCs. Of course, the normal color index is one. In computing the index, 5,000,000 is taken as the normal red count and 100 as the normal hemoglobin percentage.

Example: The color index for a patient whose red count is 4,000,000 and whose hemoglobin percentage was 60% would be derived as follows:

4,000,000 red blood cells = 80% normal.

The hemoglobin = 60% normal.

The color index = %Hb ÷ %RBCs = 60 ÷ 80 = 0.75.

8. *Preparation of Blood Films.*

Films may be prepared for the purpose of staining by spreading a drop of blood on a slide or between two coverslips. A good film is a prerequisite for a satisfactory examination, and so much may be learned from a stained film that the very considerable time which must be spent in acquiring technic is well spent. Slide preparations are comparatively simple to make. They are open to certain objections, the chief of which is that a drop is spread over so large an area that to obtain a really representative count one must cover a large portion of this area, since the leucocytes are frequently grouped at certain parts of the slide.

Cover-glass preparations.

To obtain good films, the following points must be observed:

- a. The films must be of the proper size and thickness. They should be at least $\frac{7}{8}$ of an inch square and should be of No. 1 thickness. Smaller coverslips are too difficult to handle and thicker ones will not permit focusing with the average oil-immersion lens.
- b. They must be absolutely clean and dry and free from dust and lint. If this requirement is not lived up to, all labor is lost.
- c. The drop of blood must be of the proper size. This can be learned only by experience.
- d. All operations must be carried out rapidly or the blood will coagulate.

Directions for making coverslip films.

- a. Clean a box of coverslips by immersing them in C. P. nitric acid in a covered glass dish. Allow them to stand 15 minutes. Pour off the acid. Then add 95% alcohol, with caution, holding a glass plate over the dish, since gas will be evolved. Allow this to remain 5 minutes and pour off. Rinse in repeated changes of distilled water till acid cannot be detected by litmus. Then keep in 95% alcohol, wiping carefully with clean gauze as required. Do not dry until ready for use.
- b. Place one coverslip in wire forceps, gripping slip at one corner.
- c. Prick ear or finger and obtain drop of blood.
- d. Dust coverslip in forceps with camel's hair brush, warm gently in alcohol or Bunsen flame to drive off moisture, and apply to drop of blood, placing this in center of coverslip. Do not touch the ear with the slip. Simply pick up the drop.
- e. Dust a second coverslip with camel's hair brush, warm gently in flame, and drop onto the first cornerwise, so that the two coverslips look like an eight-pointed star. Allow drop to spread, and pull the second or upper coverslip away with a single quick stroke, keeping the planes of the two slips absolutely parallel.

A satisfactory film should be tongue-shaped, should cover at least 60 or 75% of the total area of the coverslip, should be thin enough to dry almost instantaneously. On examination with the low power of the microscope, the cells through the greater portion of the film should be found well separated, not touching each other, and with normal blood the cell outlines should be circular.

Preparation of smears on slides.

- a. Clean the slides with soap and water, then with hot water, and finally with alcohol. Dry with vigorous rubbing.
- b. Secure a moderately large drop of blood.
- c. Place this drop at one end of a clean slide and then place a second slide over the drop with its narrow edge in apposition with the upper surface of the first slide, holding the second slide at an angle of about 45 degrees with the first. The drop should spread along the angle formed by the two slides by capillarity. Push the upper slide along so as to drag the drop after it.

With a slide preparation it is practically certain that some areas will be fit for study, and the comparative ease of preparation is a distinct point of advantage to the practitioner.

Staining.

Practically the only stains used for clinical work are those which are modifications of Romanowsky's. The one which we have found to give excellent results for general work is Wright's. The results obtained by Jenner's, Leishman's, Hastings', and Wright's are practically identical.

The solvent for Wright's stain is methyl alcohol. This serves as a fixative, so fixation by heat is unnecessary.

Procedure.

a. Wash forceps well in water and rub vigorously with a clean cloth or paper. This removes traces of acid, which is fatal to Wright's stain.

b. Cover the film with Wright's stain for 1½ minutes.

c. Add distilled water drop by drop until a distinct metallic film or scum appears. About equal parts of water and stain are required. Leave 3½ to 5 minutes. It is better to leave more rather than less time.

d. Wash in tap water until the film is pink.

e. Note with the low power the result of the stain according to the criterion given below.

f. Blot, dry and mount in balsam.

g. Examine with low, high and the oil-immersion lens.

Criteria of a Satisfactory Stain.

a. In a satisfactory stain the following will be noted: The red blood cells will be copper colored without any overcoating of blue. This does not apply to occasional red cells with a blue tinge, for this may be due to polychromatophilia. If the entire field is blue the film has not been washed sufficiently with water. Repeat step (d) above.

b. The nuclei of the leucocytes should be a deep blue. If pale blue, the film has not been stained sufficiently and steps (c) and (d) above must be repeated. Another possibility is that the stain has deteriorated.

c. The cytoplasm of the polymorphonuclear neutrophilic cells should be lilac with pinkish background. If they are entirely pink, the film has been washed too long, and should be stained again.

d. The cytoplasm of the large and small mononuclears should be a robin's egg or sky blue. If it is a dark blue, the film has been overstained and should be washed further (step d). If the defect is not remedied now, start with a new film, and do not give the mixtures of stain and water so long to act.

e. There should be no granules of precipitated stain covering the R.B.Cs. This will give rise to much confusion. It is probably due to allowing the staining mixture to dry. Stain a new preparation with more care.

f. There should be no stain on the reverse side of the coverglass. This may be easily removed by rubbing with a filter paper moistened with alcohol.

9. Study of the Stained Film.

The film should be studied first with the low objective, then with the high, and finally with the oil-immersion. In making a report the following points should be noted, negative as well as positive findings being given:

a. Distribution of red blood cells (good or poor)?

b. Relative proportion of leucocytes to red blood cells?

c. Apparent diminution in number of R.B.Cs.?

d. Central pale area, increased or diminished?

e. Are R.B.Cs of uniform size or is there anisocytosis, microcytosis, macrocytosis?

f. Are R.B.Cs of normal shape, or is there poikilocytosis?

g. Are R.B.Cs stained uniformly or is there polychromatophilia?

1. Is punctate basophilia present?

2. Nucleated red blood cells, increased or diminished?

3. Blood platelets, increased or diminished?

4. Parasites, present or absent?

Differential Count.

At least 250 white cells should be enumerated. A mechanical stage is of great assistance, but as an expedient one may use a slide clamped in the stage firmly with a microscope clip. The slide bearing the blood film may be pushed along this until one column across the film has been studied. Then the guiding slide may be moved sufficiently to bring a new field into view and the film may be moved back. The process may be repeated until the required number of cells has been seen.

In reporting upon a differential count, employ the following form, and always state the total number of W.B.Cs, counted, as well as the percentage of each form:

Polymorphonuclears, neutrophilic,
 Polymorphonuclears, eosinophilic,
 Polymorphonuclears, basophilic (mast-cells),
 Transitionals,
 Mononuclears, large,
 Mononuclears, small,
 Myelocytes, non-granular,
 Myelocytes, neutrophilic,
 Myelocytes, eosinophilic,
 Myelocytes, basophilic.

Remember that nucleated R.B.Cs are not leucocytes and while it is desirable to note them, if any are seen, they are not to be enumerated in the differential.

10. *Examination of Fresh Blood Smears.*

A fairly large drop of blood should be placed on the center of a thoroughly clean coverslip and mounted, blood side down, on a clean slide. The blood should be spread evenly and should cover all or practically all of the area beneath the coverslip. If it has been satisfactorily made, rouleaux formation will be noted only at the borders. In the center of the spread, the R.B.Cs should be discrete, and crenation should not be seen. The white blood cells can be easily distinguished on account of their lack of hemoglobin. The polymorphonuclear cells will be told by the nucleus. The neutrophils on the one hand can be distinguished from the mast-cells and eosinophiles on the other by the difference in the size of the granules in the cytoplasm. Note and study the amoeboid movement of the polymorphonuclear cells. The mononuclear cells do not show this, and of course can also be told by the absence of granules in their cytoplasm.

Also note the tiny platelets, usually occurring in clusters, frequently immersed in a network of fibrin strands. Then there are dancing infinitesimal particles, hemoconien.

A study of fresh blood is of use chiefly in making a diagnosis of malaria, when malaria parasites may be seen within the R.B.Cs. It is well to be familiar with the appearance of fresh normal blood smears, since much may be learned from these preparations when stains are not available.

11. *Determination of Coagulation Time.*

Method of Lee and White (see *Am. Journal of Med. Sciences*,
 Vol. 145, No. 4, Apr., 1913, p. 495.)

Apparatus required.

Small all-glass syringe (capacity 15 to 20 minims or 1 c.c.).
 Needle to fit (preferably platinum).
 Small glass test-tube (diameter about 8 m.m.).
 Sterile normal saline solution (0.9%).
 Surgical supplies for sterilizing skin.
 Torniquet.

Technic.

Boil the syringe and needle. Then rinse it by drawing in and ejecting normal saline solution. Also rinse the test tube with normal salt solution. Sterilize the skin over the veins at the bend of the elbow, preferably by application of tincture of iodine. Apply the tourniquet above the elbow, and then prick the skin with the needle attached to the syringe. When the skin has been pierced, enter the vein with a second thrust. Now draw out the plunger of the syringe. Blood should run into the syringe at once. If it does not, do not withdraw the needle, but probe under the skin with its point until blood has been obtained. Remove 1 c.c. (15 minim) and immediately eject into the small test-tube which has been previously rinsed with normal salt solution. The tube is now tipped end-wise every thirty seconds. The point at which the blood no longer flows from its position but maintains its surface contour when inverted is taken as the end-point.

The advantages of this method over others in vogue are:

- a. Its simplicity and small expense.
- b. The fact that it can be used in the hospital or at the bed-side.
- c. Blood is obtained directly from the vein without the admixture of unknown quantities of tissue-juice, as is the case when blood is obtained by skin punctures.

Temperature does not introduce an error of importance if the room temperature is between 65 and 90° F.

The normal coagulation time, *according to this method*, varies from 5 to 8 minutes, with 6½ minutes as the average.

12. *The Oxydase Reaction.**Solutions Required:*

Solution A....	{	95% alcohol	9 parts
		Formaldehyde solution (40% gas)	1 part
		Freshly prepared.	

Solution B....	{	Alphanaphtol (Merck's "Recryst" or Merck's	
		"Reagent")	1 gm.
		40% alcohol	100 c.c.
		H ₂ O ₂	0.2 c.c.

Solution C....	{	Pyronin	1 gm.
		Anilin	4.0 c.c.
		40% alcohol	96.0 c.c.

Solution D.....0.5% aq. sol. Meth. Blue—Grubler's BX.

Procedure.

The films should be fixed by covering them with the fixative, Solution A. After two minutes, this is washed off with water, and the film flooded with Solution B. This is washed off and the film is allowed to remain in a dish of running water for 15 minutes. It is then dried and is stained for two minutes with Solution C. This is washed off with water, and Solution D is poured on and allowed to remain from 30 to 60 seconds. After washing with water, the slide is blotted and is mounted in neutral balsam.

Results:

All myeloid cells, polynuclear, myelocytes, transitionals, and myeloblasts, will show blue granules, while lymphocytes and lymphoblasts will not.

13. *Blood Cultures.*

A 10 c.c. Luer syringe is desirable, though any syringe which will stand boiling may be used. The needle should be about 22 gauge, and should be sharpened on an oilstone. A platinum needle is not necessary, though it is a distinct convenience, since it may be flamed immediately before using. It also retains its point better than does a steel needle.

Before sterilizing test the needle and syringe by drawing in water to be sure that it works. Then insert a stilette into the lumen of the needle, and sterilize either by subjecting to 20 lb. pressure for 20 minutes in an autoclave or by boiling in 1% sodium carbonate solution for 30 minutes.

Arrange on a table near the patient the media and an alcohol flame. For obtaining blood, one of the veins at the bend of the elbow is usually selected. Scrub the overlying skin thoroughly with tincture of green soap, ether, alcohol. Finally, apply tincture iodine, cover the area with a piece of sterile gauze or sterile towel, which is removed when ready to puncture. Apply a tourniquet to the arm above the elbow, and allow the vein to distend. To facilitate this, instruct the patient to close and open the fist repeatedly. Then pierce the skin with a quick thrust with the needle which is attached to the sterile syringe. It is better to go through the vein a little to one side of the vein with the first movement. Then gently push the needle into the lumen of the vein, and with the needle held carefully in this position, draw out the plunger of the syringe. Blood should rush into the syringe. If it does not do so, move the point of the needle slightly until it pierces the vein.

When the desired amount of blood has been obtained eject it into the desired media, carefully protecting the point of the needle from contamination, and flaming the mouths of the test-tubes or flasks before ejecting blood into them.

Routine Cultures: Inoculate two or three flasks of nutrient bouillon (containing 150 to 200 c.c. of bouillon each), putting in each a different amount of blood, *e. g.*, 2 c.c., 3 c.c., 5 c.c. Incubate at 37° C.

Agar Plates: If plates are desired, melt the contents of a number of tubes of agar in a water bath by boiling. When the agar has become quite fluid add cold water to reduce the temperature to about 45° C. Do this before starting to obtain the blood. When actually ready to inoculate the media the temperature should be 40° C. Place 3 to 4 sterile Petri dishes on a sterile towel, inject about 1 c.c. into a tube of melted agar, flame the end of the tube carefully, lift the cover of the Petri dish a little, still holding it over the lower portion to prevent particles from falling in, and pour the inoculated melted agar into the plate. Allow to stand a few minutes and then incubate at 37° C.

Cultures for Typhoid Bacilli.

Inoculation should be made into plain bouillon of +1.0% reaction and into plates of sodium glycocholate agar. These are handled exactly as described above under "Agar Plates." The media is prepared as follows: 15 gm. of agar shreds and 15 gm. of peptone are dissolved in 1000 c.c. of water, either by heating in a pan over a flame, or preferably, by placing in a large flask in the autoclave for 30 minutes at 15 pounds. The mixture is then cooled to 60° C., and 35 gms. of lactose and 5 gms. of sodium glycocholate are added, after which it is titrated. The reaction is adjusted to +1.0%. The whites of two eggs are whipped up in a little water and are thoroughly mixed with the partially prepared media, which is then allowed to remain in a steaming Arnold sterilizer for 30 minutes. At the end of this time it is again titrated and is restored to its original volume. If additional alkali

is added it should be placed in the Arnold sterilizer again for about 10 minutes, when it is filtered through absorbent cotton, is tubed and then sterilized on three successive days for about 20 minutes each time in the Arnold sterilizer.

Cultures for Pneumococci or Streptococci.

Both plain bouillon and dextrose bouillon should be used as well as agar plates.

Rosenow's Method of Preparing Partially Anaerobic Cultures.

(*J. of A. M. A.*, Sept. 12, 1914, Vol. LXIII, pp. 903-907.)

Obtain from 15 to 30 c.c. of blood and mix it in a sterile container with a decalcifying solution, using about 1 c.c. of the sterile decalcifying solution to each 5 c.c. of blood. This solution is prepared by adding 2 gm. of sodium citrate to 100 gm. of 0.9% sodium chloride solution. In order to get rid of hemoglobin and serum, the decalcified blood is added to sterile water contained in sterile centrifuge tubes of about 50 c.c. capacity. These tubes are centrifugalized and the supernatant fluid is pipetted off. The sediment is then planted with a sterile capillary pipette at the bottom of a long test-tube which has been practically filled with melted agar. Before planting the tube should be steamed for 15 minutes in an Arnold sterilizer to drive off molecular oxygen and should then be cooled to 39° C. Care should be taken not to introduce any bubbles of air when the blood-sediment is placed in the bottom of the tube with the pipette.

Rosenow recommends for this purpose various types of media, such as ascites dextrose agar (1 part of sterile ascitic fluid is added to 9 parts of agar of +0.5% acidity after steaming in the Arnold sterilizer for 15 minutes and then cooling to 60° C.), plain agar, or dextrose agar.

Taking blood in patient's home.—It will be found more convenient to take the blood to the laboratory, where media may be inoculated under more favorable circumstances. Secure a bottle of about 50 c.c. capacity and provide a rubber stopper to fit. In the bottle put about 20 c.c. of normal saline solution (0.9%), to which enough sodium citrate has been added to make the concentration of sodium citrate 1%. Stopper with cotton and sterilize by subjecting to 20 lbs. pressure in autoclave for 20 minutes. Wrap the rubber stopper in gauze and sterilize this also at same time. When the blood has been secured at the bedside it may be ejected directly into the sterile citrated salt solution and the sterile rubber stopper inserted. Cover this in turn with a square of sterile gauze and take the bottle to the laboratory. The citrate will prevent coagulation.

Modified Keidel Tube: This is a vacuum ampoule partially filled with sterile glucose bouillon, attached to a sterile needle by a sterile rubber tube. The needle may be inserted into a vein and the top of the glass ampoule crushed by a hemostat within the rubber connection, when the blood will rush into the ampoule. When enough has been secured, withdraw the needle, flame the stilette which came in it and reintroduce it into the lumen of the needle. Take to the laboratory upright and incubate at 37° C. These tubes may be secured from the Hynson-Westcott Company, Baltimore, Md.

Time of incubation for blood-cultures.

Blood-cultures should be kept under observation for at least a week before considering them as showing no growth.

14. *Widal Reaction.*

Obtain 5 to 10 drops of blood in a small glass capsule (Wright's capsule). If a blood-culture is to be done at the same time, eject the residual $\frac{1}{2}$ c.c. or 1 c.c. of blood in the syringe into a small test-tube.

Allow the serum to separate from the clot. This may be accelerated by centrifugalization. If a capsule is used, seal one end and place it with the sealed end down in a centrifuge tube containing a bit of cotton. A test-

tube may be put in the centrifuge with no precaution except balancing it. When separation is complete, draw the serum into a capillary pipette and eject a drop into each of two small dishes marked respectively A and B (glass salt dishes). Then free the capillary pipette from serum, draw into it sterile normal NaCl solution, eject, repeat the process in order to free the pipette from serum, and then add from the pipette 9 drops of normal NaCl solution to the serum in A and 30 drops to the serum in B. The serum dilutions are now ready.

A stock typhoid culture of known agglutinability should be available. This may be kept in the laboratory at room temperature. It may be kept alive by making transplants to plain agar once a month. When Widal's are to be performed a sub-culture should be made by inoculating a tube of plain agar which is kept at 37° C. for 8 hours. It will then be ready for the test.

Take 3 "hanging drop slides" and make rings of oil around the edges of the circular depressions. On the coverslip place with a platinum loop 1 drop of dil. A (1:10) and then 1 drop of B. typh. bouillon culture, mixing well. The dilution is now 1:20. Mount this, drop down, on one of the slides and note the time.

Repeat procedure with 1 drop of dilution B (1:30), which will give a final dilution of 1:60. Prepare a third coverslip by mixing 1 drop of B. typh. culture and 1 drop of normal saline. This serves as a control and in it the bacilli should show no clumping or loss of motility at the end of one hour.

To be positive complete agglutination and complete loss of motility must be present in the 1:60 dilution at the end of one hour.

Performing the Test with Dried Blood:

Dried blood is sometimes furnished, coming to the laboratory on a bit of glass or a small dish. We consider the use of dried blood objectionable, since accurate dilution is out of the question. Salt solution may be added till an orange tint is produced. This is said to be an approximately 1 to 40 dilution. When one drop of this is diluted with 1 drop of B. typh. culture the resulting dilution would be about 1 to 80.

15. *Obtaining Blood for the Wassermann Reaction.*

It is impossible to outline the technic of this complicated serological test in the present manual. We will describe the procedure for obtaining the blood. The receptacle should be a dry, chemically clean, and sterile test-tube. Bacteriological sterility is not absolutely necessary but is desirable, especially if the blood is to be shipped to a remote laboratory. A tight-fitting sterile cork stopper should be provided. Gauze or cotton may be used to close the end of the test-tube, but has the disadvantage that if the tube should be accidentally inverted or placed on its side, the serum is absorbed.

We condemn the practice of obtaining blood for this test from the capillary hemorrhage produced by puncture of the ear lobe or finger-tip. This method is untidy, leaves in a conspicuous place a conspicuous mark which may prove embarrassing for the patient. It is difficult to obtain a sufficiently large quantity, and a considerable amount of hemolysis is apt to be seen in the specimen.

It is preferable to perform venupuncture. This may be done with a needle attached to a Luer or similar syringe (see Section 13 of this chapter). The same results may be achieved without a syringe, puncturing the vein with a large hollow needle, and allowing the blood to flow directly into the test-tube. Another method which has attained considerable popularity is the use of the Keidel tube.* This is a vacuum ampoule to the end of which is fitted, by means of a rubber connection, a sterile needle. The needle is inserted into the vein, after which the tip of the ampoule is broken off by

*Keidel's tubes may be obtained from the Steele Glass Co., Philadelphia, Pa.

crushing the rubber connection with a hemostat. The blood then rushes into the vacuum and the ampoule is rapidly filled. The stilette may now be inserted into the lumen of the needle to close it and the outfit may be shipped to a central laboratory.

The writer employs in his own practice the MacRae needle.** This simple device comprises a two-way needle which may be inserted into a rubber stopper of the size needed to close the test-tube which is to be employed. The sharpened needle projects about 1½ inches and is inserted into the vein. The other passageway has a bulbous end, to which is attached a short length of thick walled rubber tubing of narrow bore. Through this tubing the operator may suck the air out of the test-tube and so create a vacuum.

**May be secured from Geo. Tiemann & Co., Park Row, New York City.

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The Cleveland Medical Journal

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Short notes upon clinical experiences or reports of interesting cases will be welcomed by the editors.

Original articles are accepted for publication by this Journal only with the distinct understanding that they are contributed solely to this Journal and will not be published elsewhere as original.

EDITORIAL

ON BEING THE BROTHER OF THE PRODIGAL SON

The Bible tells of the son who demanded his share of the father's estate; went to a far country; made a fool of himself, and returned home starving, all his wealth wasted. There is another brother in that story, who stayed at home, worked hard, and behaved himself all those years; and he was a little tried when the

father killed the fatted calf for the returned ne'er-do-well. We cannot help feeling a thrill of sympathy for that prosaic, stay-at-home brother. What is the use of being good if the prodigal not only gets the fun of his "riotous living," but also wins the fatted calf in the end?

Sometimes, we feel that our little "Journal" is that elder brother. It has been good all its life. It accepted a standard of ethical advertising at a period when such a standard was not dreamed of by the mass of medical publications. As the elder son was always a loyal worker for his father, so have we always worked loyally for the standards set up by our parent, the *A. M. A.* The recommendations of its Committee, as embodied in "New and Non-official Remedies," are spread upon our pages faithfully, and thus many dollars' worth of free advertising is given the products there endorsed. However, when it comes to passing around juicy slices of the fatted calf, we somehow fail to be included at the barbecue. The manufacturers of these "New and Nonofficial" products seem oblivious to our existence when the time arrives for placing their advertising contracts. We fail, also, to notice any strong pressure upon them from our worthy head, the *A. M. A.* A little influence from that direction, to secure advertising support for a magazine that accepts the *A. M. A.* standards, might do wonders. Apparently, however, the father is more interested in tempting the prodigal magazines back to rectitude than in giving a helping hand to those that never went astray.

Meanwhile, the prodigal IS getting the fatted calf and all the trimmings. We can scarcely pick up a magazine of the type whose standards we scorn without seeing these very "New and Nonofficial" products advertised alongside "Sanatogen," "Musterole," and all the rest. Why will manufacturers of good remedies support such publications?

Sometimes the rewards of virtue seem too meagre. We feel like the country parson's good wife, who now and then felt a wild desire to go off somewhere and be as wicked as she knew how. There may be a heaven for medical magazines, where the "Journal" will get its reward, but we should hate to think that it must die before it can receive its deserts! Meanwhile, we should like a share of the prodigal's fatted calf!

ABSTRACTS

ABSTRACTS IN MEDICINE

Syphilis of the Liver. H. L. McNeil, *Am. Jour. of Syphilis*, 1917: I: 738.

This paper is concerned with the clinical and pathological study of 90 cases of hepatic syphilis, occurring in the University hospital of the Texas Medical School. The incidence of syphilis in Galveston may be seen from the following figures: Out of 1,000 autopsies done upon all classes of patients 300 were syphilitic as judged by autopsy findings. It is to be remembered, however, that a large proportion of the patients were negroes.

Acute Hepatitis—This condition was diagnosed in seven cases. Definite hepatic enlargement and pain over the liver were the most constant clinical symptoms. Four of the cases showed jaundice. All had a positive Wassermann reaction in the blood. Six of the patients made a rapid recovery when put on antisyphilitic medication. The seventh while under treatment developed an endocarditis which proved fatal. The autopsy showed a malignant streptococci endocarditis with multiple pulmonary infarcts.

The gross appearance of the liver was normal. Microscopic examination, however, revealed the whole liver parenchyma infiltrated with small round cells. These are looked upon as incipient gummata.

Syphilitic Cirrhosis—A diagnosis of syphilitic cirrhosis was made in 34 cases. Definite hepatic enlargement was a constant clinical finding in all the cases. Some tenderness over the liver was also present in most instances. Ascites was noted in seven cases, enlargement of the spleen in six. Jaundice was not a common symptom, being marked in only one case; moderate in six, and slight in three. There was rarely much anemia. The writer considers this a valuable differential point between syphilis and carcinoma of the liver.

The gross pathological picture of hepatic cirrhosis may be divided into three general types: (1) The lobulated liver. (2) The diffusely cirrhotic liver. (3) Syphilitic perihepatitis.

It is interesting to note that the autopsies on 25 patients showed a syphilitic perihepatitis without cirrhosis of the liver parenchyma. The writer considers syphilitic perihepatitis the most common hepatic lesion found at autopsy in patients dying from latent syphilis.

R. W. S.

Syphilis of the Pulmonary Artery. Syphilitic Aneurysm of Left Upper Division. Demonstration of Spirochete Pallida in Wall of Artery and Aneurysmal Sac. Alfred Scott Warthin, *Am. Jour. of Syphilis*, 1917: I: 693.

In this paper the writer gives a very complete review of the literature on the subject, together with a clinical and pathological report of his case. He concludes that syphilis of the pulmonary artery should be put upon the same basis as that of the aorta. Although not as important clinically, it most probably occurs as a contributory factor to the general cardiovascular disturbance seen in syphilitic patients. A few cases of pulmonary sclerosis reported in the literature had the rather distinct clinical complex of dyspnea, cyanosis, cardiac enlargement, chronic passive congestion and polycythemia. Certain cases of chronic polycythemia, Vasquez's disease, may fall in this group.

R. W. S.

Ventricular Fibrillation in Man with Cardiac Recovery. G. Canby Robinson and J. F. Breckin, *Archiv. Int. Med.*, 1917: XX: 725.

The writers report a case of ventricular fibrillation, as evidenced by an electrocardiogram taken during an attack of cardiac syncope.

This is the first instance on record of even temporary recovery from ventricular fibrillation since the condition is incompatible with life if lasting for any length of time. It is remarkable that the authors should have succeeded in obtaining a record from a patient during a transient attack.

R. W. S.

"Truth About Intraspinal Injections in Treatment of Syphilis of Nervous System." A Reply, by John A. Fordyce, M. D., *J. A. M. A.*, Nov. 3, 1917: LXIX: No. 18: 1482.

This is an able answer to an address given by Dr. Bernard Sachs before the Section on Nervous and Mental Diseases of the American Medical Association at its last session. Sachs' article was published at an earlier date in the *Journal of the American Medical Association* and since it was delivered as the Chairman's address, it may have been accepted by some as being a judicial survey of our present knowledge of this therapeutic measure. In reality it was a biased dissertation, only frailty supported by clinical or laboratory evidence. Fordyce has drawn upon his extensive experience for his answer. We present his conclusions in his own words:

1. In tabes, certain types of cerebrospinal syphilis like meningitis, meningo-myelitis, meningo-encephalitis and in optic atrophy with positive findings in the fluid, intraspinal treatment succeeds in relieving or curing the conditions after failure of intravenous and other treatment.

2. It is the only procedure that can be employed after the intravenous treatment fails or when the patient develops an intolerance to arsenic.

3. With proper technic and experience, it is less dangerous than intensive intravenous treatment.

4. In paresis with stigmata of degeneration, the most to be hoped for is temporary arrest of the encephalitis. There are borderline cases of meningo-encephalitis which simulate paresis and which are curable by the treatment in question.

5. The criticism of the method is based largely on the results following imperfect technic and by its employment in cases without clear indications afforded by spinal fluid examination. Aside from these reasons, it has been condemned after short and imperfect trials. In some cases the existing lesions are activated by early injections and cured by persistence in the treatment.

6. The author's statement that it is regrettable that changes in biologic findings should be made the criterion of the efficiency of any therapeutic method is unfortunate from the standpoint of the patient as well as the investigator.

With certain exceptions noted in the body of the article, there is an intimate relationship between the clinical symptoms and the fluid findings.

* * * If we were to discard the positive knowledge acquired in the past few years as a result of systematic examination of spinal fluids in syphilis, we should have vague ideas as to the time the fluid is infected, no clear conception of the difference between active and abortive tabes, and no method of differentiating early paresis from conditions that simulate it.

* * * * *

7. The future of the syphilitic individual and the hope of anticipating or arresting the incurable regeneration is largely dependent on early and systematic examination of the spinal fluid.

C. L. C.

ABSTRACTS IN SURGERY

The Methods and Results of Transplantation of Bone in the Repair of Defects Caused by Injury or Disease. Hey Groves, E. W., *Brit. J. of Surg.*, 1917: V: 185.

The chief fundamental studies of this subject have been made by Ollier, 1867; Barth, 1893; Axhausen, 1908, and Macewen, 1912, from whose

papers we may reconstruct the following narrative of bone growth. After the subperiosteal resection of bone in the adult there is no new bone formed from the periosteum. In young bone, when a portion of its whole thickness is removed, leaving the periosteum, after a short time the gap is filled by new bone. This experiment does not prove periosteal bone formation, as the gap may have been filled by the epiphyseal cartilages pushing with newly formed bone the cut fragments toward each other. In resection of a whole bone, no new bone is produced if the deep layer of periosteum is not retained. Retention of this deep layer is only possible in young animals. In adult bones, where periosteum will not produce new bone, this can be brought about by a stimulation of the dense bone by cutting and drilling. Macewen says that if new bone is produced by a periosteal flap, it is due to superficial layers of bone having been retained by the flap. Therefore, in reality there is a middle or cambium layer lying between the periosteum and the compact bone in young animals which strips off with the periosteum and from which new bone is formed. This is the true explanation of the variation in results due to age differences.

Bone deprived of its periosteum will grow in length and thickness, form callus, heal after fracture and reform new periosteum. After bone grafting the chief osteogenesis in the graft occurs beneath the periosteum, but the new bone is really formed from the superficial layer of the old bone. For example, a preparation of a recent callus shows formation from within out, the bone callus being next the old bone, the cartilage being next the periosteum. Periosteum is a limiting membrane, hindering exuberant growth. It is also a nutritive vascular membrane. In grafts the periosteum readily adheres to the adjacent vascular structures and becomes further vascularized, while bone itself resists the formation of new blood vessels. Hence the better results in grafts with periosteum attached. As to the red marrow, its layers next to the bone have precisely the same capacity for osteogenesis, though to a lesser degree. If grafted in such manner as to allow rapid vascular connection with its bed, it will take an active share in new bone formation. Hence a split graft will be more actively proliferative than a whole graft. Compact bone, if it has a proper blood supply, is quite independent of either periosteum or endosteum, for both growth and repair. If deprived temporarily of its blood supply, as in a graft, it acts in a very indolent manner, the greater part of its cells die, except those on the free surfaces, which survive and proliferate to form new bone.

The author reports experiments on the cat, studying cortical grafts, intramedullary grafts, the influence of fragmentation on the growth of the graft, the influence of insecure fixation, the reaction of living bone to metallic sutures or pins, and homogenous and dead bone grafting, all with excellent illustrations, from which we take the following summary. The most ideal graft is a section of living bone used in its entire thickness. Any kind of bone graft gives better results when used whole than when fragmented. Cortical grafts are far better than intramedullary. An intramedullary graft, if small and loose, takes no part in repair, neither does it act as a splint. If it fits the narrow cavity tightly it hinders osteogenesis and is frequently subject to fracture. The success of a living graft depends largely upon the extent of its contact with living bone, the accuracy of its apposition, and the firmness of its fixation. A graft of dead boiled bone, properly fixed by metal sutures, will give a better result than a living autogenous graft insecurely fixed by catgut. Metal pins and sutures are useful, and there is no evidence that they hinder osteogenesis. For use as pegs or nails there is no advantage in using living rather than dead bone. Homogenous grafts, under favorable circumstances, act just as well as autogenous. Provided secure fixation of the graft is not disturbed, mobility of the limb favors osteogenesis.

Clinically the author believes the "don't touch the wound with the hands" technic of Lane is not necessary if rubber gloves are worn, and is mechanically disadvantageous. Exclusion of the skin is practised by putting

"stockingette" over the limb, incising through this and the skin, the edges of the skin and covering being temporarily united by means of Michel's clips. Bone grafting is to be avoided when there is the slightest suspicion of the presence of latent infection. All scar tissue in the skin and the soft parts must be excised. The tibia and fibula are the best sources of graft material; rib is often quickly absorbed and its spongy nature makes its fixation difficult. Periosteum and endosteum should both be preserved. All muscles and tendons should be cut away from the graft. The periosteum should be sliced longitudinally. Homogenous and dead bone grafts are useful to supply the head of the femur and the lower end of the humerus, where exact shape is important. Fixation of the graft is best obtained by the use of soft iron wire, not plated, placed as a mattress suture through drilled holes, or by turns around the whole shaft of the bone. Metal pins, bolts and ivory pegs are also used. Secure fixation is absolutely essential.

C. H. L.

Gunshot Wounds of the Kidney and Ureter as Seen at the Base. Fullerton, A., *Brit. J. of Surg.*, 1917: V: 248.

The most frequently associated lesion is a wound of the pleural cavity (40%). Injury of the liver is frequent; of the spleen, fairly frequent; injury of the spine occurs in 14% of the cases; injury to the hollow viscera, pancreas, diaphragm and peritoneal cavity occur. The signs and symptoms are hematuria, urinary fistula, shock, anaemia, vomiting, a tender and rigid abdomen in most cases, abdominal distension, especially in the cases with cord injury, dullness and tumor in the flanks. Injury to the bladder and the hemorrhagic cystitis due to spinal cord injury are best ruled out by means of the cystoscope. The three important complications are sepsis, secondary hemorrhage and urinary fistula. Secondary hemorrhage may occur as late as one month after injury, and may take place into the bladder, perirenal tissues, peritoneum, and through the wound to the abdominal parietes. No operative procedure should be undertaken in these cases of hemorrhage, or else the whole kidney should be excised, but only after at least moderate assurance that the other kidney is functionally good. Urinary fistulas are best left alone for a time, unless there is evidence of the accumulation of urine in a cavity, when it is well to institute drainage. If the fistula persists immoderately long a plastic or nephrectomy is indicated.

C. H. L.

Results of Nephrectomy for Renal Tuberculosis. Lower, W. E., and Shupe, T. P., *Surg., Gynec. and Obst.*, 1917: XXV: 522.

The success of any surgical procedure is to be determined by its end-results no less than by its attending mortality rate. Tuberculosis of the kidney without involvement of the ureter and bladder is comparatively rare. The symptoms complained of are generally referable to the bladder rather than to the kidney. For this reason disappointment often comes to the surgeon and to the patient, because in those cases in which the bladder symptoms are secondary to grosser lesions of the bladder and not to irritation of infected urine, the symptoms, as a rule, are not immediately relieved and not infrequently they never disappear entirely. Nephrectomy only removes the focus of infection in the urinary tract. Nevertheless the removal of this focus enables the patient to strengthen his resistance and thereby aids in the cure of the remaining lesions.

The mortality rate of Drs. Bunts, Crile and Lower has been 2.3%, while a recent series by Dr. Lower, comprising over 100 cases, shows an immediate mortality of less than 1%. The remote mortality, in the majority of cases, has been due to tuberculosis in other parts of the body, such as tuberculous peritonitis, general miliary tuberculosis, and pulmonary tuberculosis.

The data as to persistence of symptoms are based on the replies from 45 patients. In 48% of the patients with painful and frequent urination

before operation, some bladder symptoms persisted. The history of these cases showed that bladder trouble had extended over a long period prior to operation. Pain in the back of a colicky nature was reported by 12 patients, while 25 reported pain of varying degrees in the back, hip, or side. Patients who at time of operation complained mainly of pain in the back, with former bladder symptoms quiescent, showed at operation old caseous kidneys resulting from autonephrectomy, and made complete recoveries. Hemorrhage from the kidney, of course, subsided after operation, though 44 reported hematuria (!). The majority of the cases in which before the operation pus was present in the urine reported that this symptom still persisted. In this series the shortest duration of symptoms before operation was three weeks, the longest 19 years. Patients usually wait from 8 months to 3 years after the appearance of the first symptoms before seeking surgical relief. As far as can be determined, in only two of the operative cases in this series were both kidneys involved. Infection of the second kidney is probably more frequent than these operative findings would suggest, as autopsy records show that about two-thirds of the cases are bilateral. C. H. L.

Postoperative Pulmonary Complications. Cutler, E. C., and Norton, J. J., *Surg., Gynec. and Obst.*, 1917: XXV: 621.

This communication is based on a study of 3,490 operative cases observed at the Massachusetts General Hospital from July, 1915, to July, 1916. One in every 54 cases operated developed a pulmonary complication, and 1 in 106 died. Anesthesia in good hands can be disregarded as sufficient to bring about such sequellae. The main predisposing factors are a poor general condition (age, anaemia, alcoholism, arteriosclerosis, weak heart, susceptible lungs), oral sepsis (teeth, tonsils), pre-existing tuberculosis, emphysema, bronchitis, and recent pneumonia; a badly given anesthetic (forced, aspiration of mucus permitted, unnecessary intubation of naso-pharynx, vomiting on the table), the presence of septic foci, radical operations opening up pathways to the neighborhood of the lungs or to the lungs themselves, epigastric operations, exposure to cooling fluids or draughts and post-operative pain resulting in hypostasis from poor expansion of the lungs.

The prophylactic measures suggested are: Careful preparation of the mouth, including eradication of oral sepsis from the teeth and tonsils, antiseptic mouth wash and extra careful brushing of the teeth before operation. The patient should be observed for at least two days before operation to insure the absence of lung pathology and septic foci. Anesthesia should preferably be administered by an expert, ether to be given by the drop method, and mechanical appliances in the nose and mouth avoided unless specially indicated. The surgeon should be ready to operate when the patient is prepared. Exposure during preparation on the table should be limited, with no unnecessary wetting. There should be plenty of blankets with a warm operating room. Trauma, especially near large vessels and in the epigastrium, should be avoided. Rigid asepsis should be practiced. In epigastric operations the fascia should be sewed with silk so that tight supporting bandages will be unnecessary. This does away with splinting of the lower lung. Patients should be allowed more freedom of movement in bed, with getting the patient up and out of bed as early as is compatible with the existing conditions in each case. C. H. L.

Gunshot Wounds of the Lungs and Pleura. Part Three of Surgical Experiences in the Present War. Moynihan, B., *Surg., Gynec. and Obst.*, 1917: XXV: 583.

The approximate mortality from gunshot wounds of the chest is 20%. The causes of death are hemorrhage as a rule within 28 hours, and sepsis after the third or fourth day. The local conditions in wounds of the chest wall and lungs are in all respects similar to those met with in wounds else-

where. The missiles are the same, their destructive effects upon tissues are the same, and the infecting organisms are the same. The lung tissue is more resistant to attack than many other tissues. The opening of the pleural cavity and the resulting exposure of a large serous sac to infection and all of its consequences add, however, a danger of the most threatening character. The chief essential in the treatment of all cases of penetrating wounds of the chest is rest. In clean perforating wounds of the chest, rest together with the cleansing and dressing of the wound of entrance or exit, will lead to the recovery of the great majority of cases. In case of open thorax, the earliest and most complete effort possible must be made to secure closure of the wound after an appropriate toilet. In those rare cases of grave hemorrhage, when hemoptysis is present or when the blood escapes by the wound, a direct access to the source of the bleeding must be obtained, when all the contingent circumstances permit, and the wound in the lung must be treated by suture or by plugging of the cavity from which the blood escapes. In cases of hemothorax when the blood effused is small in quantity and remains sterile, no active measures are necessary, unless absorption is long delayed. Aspiration, repeated if necessary, may be performed. In cases of hemothorax, when the blood effused is large in amount and remains sterile, aspiration after the seventh or eighth day, or earlier in cases of urgent dyspnoea, certainly hastens convalescence, permits a more rapid expansion of the lung, and prevents the formation of firm adhesions which may permanently cripple the free movements of the lung. In cases of hemothorax, whether the amount of blood is small or large, when infection takes place, open operation is necessary. Early operation, both when the Carrel-Daykin technique or Morison method are adopted, saves many weeks of convalescence and permits of a more perfect functional recovery. Small foreign bodies, or rifle bullets, imbedded in the lung, often cause no symptoms; they become encapsulated and may safely be left. Larger bodies retained in the lung may cause distressing or disabling symptoms for long periods. In such cases removal after resection or elevation of the fourth rib through an anterior incision will allow of the safe removal of the projectile from any part of the lung. Pieces of metal so removed are almost always infected. (Verbatim extract from summary.)

C. H. L.

ABSTRACTS IN NEUROLOGY

A Report of the Cases of Syphilis of the Central Nervous System Observed in the Neurological Department of the Royal Navy Hospital, Haslar, During Twelve Months. Carlill, Fildes and Baker. *J. Roy. Nav. M. Serv.*, 1917: III: 398.

The only way to make treatment of syphilis of the nervous system really effective is to give it early, that is to make an early diagnosis. In order to do this an adequate examination should be made of all recruits, as frequently signs are present before symptoms occur.

A positive serum reaction may signify that a patient has a syphilitic infection, but gives no proof of involvement of the nervous system. *It is the examination of the cerebro-spinal fluid which alone affords an early and absolute means of detecting syphilitic involvement of the nervous system.*

The classification of syphilis into three separate stages is purely arbitrary, serves no useful purpose, and is generally wrong. There is no primary stage in syphilis. Quite often no lesion occurs at the point of inoculation. The conception that the disease is localized up to the time of the appearance of a primary sore is quite prevalent, but, in fact, it becomes generalized within a few hours of inoculation. The rash, as well as the chancre, is often absent, due either to the entry of very few spirochaetes into the blood-stream or to a slight reaction of the protective mechanism of the organism against the infection. It is the failure of this latter reaction which permits the organ-

isms to penetrate into relatively non-vascular tissues in which they are not destroyed by the natural antibodies or by drugs. The spirochaetes most commonly lodge in the walls of large blood-vessels where they may lie dormant or only slightly active for months or years.

At any time after inoculation certain tissues may become "sensitized" to the virus, a phenomenon similar to serum anaphylaxis. Such a reaction often occurs in a blood-vessel in which the organisms have been present for a longer or shorter period and result is a sudden thrombosis, leading to necrosis and the formation of gummata. This anaphylactic reaction really corresponds to the tertiary stage, but may occur during the so-called secondary stage or years after. The actual site of the "tertiary" lesion in the body appears to be more or less a matter of accident, but occurs most commonly in the aorta and large blood vessels.

The pathology of syphilis of the nervous system is essentially the same as in any other part of the body. It is quite common to have a syphilitic inflammation of the meninges during the early stage of generalized infection. Treatment with salvarsan under such circumstances may produce a reaction in the meninges similar to the Herxheimer reaction in the skin and serious results follow.

The pathological lesions of the nervous system of the later stages of syphilis may be divided into two broad types: (a) That in which the inflammatory process is developed chiefly in the interstitial tissues, such as the blood vessels, perivascular spaces, meninges, etc. (b) That in which the inflammatory process is developed chiefly in the nerve tissues. The first type includes the various forms of cerebro-spinal syphilis (syphilis meningo-vascularis of Head and Fearnside); the second, "para-syphilis"—tabes, dementia-paralytica and other local affections of ganglion cells.

The general pathology of these two types is the same. During the acute stage the organisms invade the blood vessels or nerve-tissues, causing more or less reaction at the time but usually becoming dormant, due to acquired immunity or due to treatment. At a later period a local or generalized exacerbation occurs, due to loss of the defensive mechanism. In the interstitial tissues inflammatory reactions occur with the proliferation of cells and collection of blood-corpuscles producing gummata, arteritis, etc., that is, meningo-vascular syphilis. However, when the spirochetes are situated among the nerve cells the toxins cause a degeneration of the ganglion cells as they have neither the power of proliferation nor repair, and result is the incurable "para-syphilitic" disease. If vigorous treatment is withheld in the meningo-vascular type, involvement of the essential nerve tissue will eventually follow.

A positive serum Wassermann reaction indicates, according to the author (Fildes), infection with the spirochete. However, examination of the spinal fluid is necessary to determine involvement of the nervous system. In some cases of purely cerebral infection the fluid may be normal. The various tests of the cerebro-spinal fluid do not indicate which type of the disease is present, this being determined only by the therapeutic result. T. S. K.

ABSTRACTS IN PEDIATRICS AND CONTAGIOUS DISEASES

Studies of the Cerebrospinal Fluid in Acute Anterior Poliomyelitis.

John A. Kolmer, Anna E. Freese, Toitsu Matsunami, Bertha M. Meine,
Am. J. M. Sc., 1917: CLIV: 548-720.

Following the epidemic of poliomyelitis a year ago there has been foisted upon the medical public considerable literature dealing with the disease from every conceivable standpoint. Everyone who had seen a case felt constrained to write the final word in the diagnosis and treatment of this infection. Much has been written concerning the examination of the cerebrospinal fluid

as a means of early diagnosis and therefore it was thought that the conclusions of Dr. Kolmer and his associates might be worthy of presentation and consideration.

(1) The majority of the fluids were water clear or but slightly opalescent when viewed against a black background; but 1 or 2 per cent of the blood-free fluids presented distinct turbidity.

(2) Seventy-seven per cent of the fluids from all stages showed an increase of total cells; in 80 per cent the count was not over 100 cells per cubic millimeter. An increase of the total cells was found in the preparalytic stage, and this increase was present in 95 per cent of cases for at least three weeks after the onset of paralysis, after which the number of cells gradually decreased.

(3) In over 90 per cent of fluids from cases after the onset of paralysis the small lymphocyte variety of cells predominated. Polymorphonuclear cells predominated in less than 1 per cent of fluids, and in over 88 per cent constituted less than 25 per cent of the cells present.

(4) An increase of protein was found in 32 to 42 per cent of fluids, and different tests for protein yielded varying results. With the Noguchi test the fluid of 1 of 6 cases in the preparalytic stage yielded a positive reaction; the percentage of positive reactions then became gradually higher to the third week after the onset of paralysis (55 per cent positive), when a rapid decrease in protein became apparent.

(5) A definite and absolute diagnostic criterion or laboratory test with the cerebrospinal fluid in acute anterior poliomyelitis has not been discovered. A clear or slightly opalescent fluid flowing under increased pressure, sterile as examined by smear and culture when collected aseptically, poor in fibrin, reducing Fehling's solution and containing an increased number of cells, chiefly of the mononuclear variety, are the most constant findings. An increase in proteoin and a high potassium permanganate reduction index strengthen the diagnosis, while a colloidal gold reaction of the luetic and meningitic zone types and the presence of natural antisheep hemolysin are helpful diagnostic data.

H. C. K.

Colon Bacillus Pyelitis Considered with Reference to Cases in Boy Subjects. Gaylord W. Graves, *Am. J. M. Sc.*, 1917: CLIV: 548-707.

The author discusses the occurrence and pathogenesis of the disease in general and gives some good references to the literature. He attempts to show the importance of considering the infection in boys as well as in girl children. Three reports of cases in boys follow. He concludes that pyelitis in boys, although far more infrequent than in girls, is, from the standpoint of the individual case, possibly even more important. In male subjects the possibility of infection through the lumen of the urethra may be excluded, and in the treatment of all cases the intestine is to be recognized and dealt with as the potential source of the disease. The possibility of the occurrence of unusual and severe systemic manifestations in well-developed pyelitis should be better appreciated. The best routine treatment for pyelitis in children is the administration of sufficient alkali to render the urine alkaline and maintain this reaction. If hexamethylenamin is employed the formalin excretion should be watched and the urine should be examined frequently, with a view of forestalling injurious effects upon the kidney parenchyma. In all obstinate cases autogenous vaccine should receive a trial. H. C. K.

Appendicitis in Infants. Isaac A. Abt, *Arch. Pediat.*, 1917: XXXIV: 641.

But very few cases occur under two years, probably due to the absence of subjective symptoms. Pain and tenderness are very difficult to elicit and more difficult to localize in the first months and years of life. Vomiting accompanies nearly all the illnesses of early childhood, so it is not even sug-

gestive. In the literature of appendicitis Abt found 80 cases in infants under two years. Two-thirds of these were males. Temperature is unreliable, pulse corresponds except in intensive peritonitis, when it is rapid, weak and irregular. Improvement of severe symptoms occurs sometimes after perforation. Constipation is the rule in severe types, diarrhea or both may occur in milder types. Hereditary predisposition to the disease must be kept in mind. Traumatism or disease of the intestinal tract are also predisposing factors, also foreign bodies, such as worms. May also occur after erysipelas, scarlet fever, preliminary and pleural infections, tonsillitis and other diseases. Bladder symptoms of painful micturition and tenesmus may occur, being caused by the low position in the pelvis of the infant cecum. The blood examination shows polymorphonuclear leucocytosis. Mortality is naturally very high, due to difficulty in diagnosis. The condition is easily confused with intussusception, intestinal obstruction, diffuse pneumococcic peritonitis, pleurisy, pneumonia, gastro-enteritis, typhoid fever (rarely), ilio-psoas abscesses or coxalgia.

C. W. W.

ABSTRACTS IN GYNECOLOGY AND OBSTETRICS

A Histological Study of 50 Uteri Removed at Caesarean Section. J. Whitridge Williams, *Johns Hopkins Hosp. Bull.*, 1917: XXVIII: 335.

This series of 50 cases is the work of the past 20 years in the Hopkins clinic. The operation was performed for a number of indications. The most frequent was repeated Caesarean—ten cases. Other indications were: frank infections, ruptures of uterus, heart lesions, atresia of cervix, myomata, premature placental separation, etc. A brief description is given of the normal structure of the uterus at term, of the placenta, and of the membrane.

Of the 50 cases, the placenta was attached to the anterior uterine wall in 18, and to the posterior wall in 32. In 15 cases, the placenta has remained attached to its uterine site. The increase in thickness of the uterine wall, the obliteration of the huge uterine cavity, the increased thickness of the placenta and its decreased diameter after the removal of the foetus are discussed. The membranes, when retained, are thrown into waves or festoons that give the uterine interior a dull, corrugated surface. The line of junction of decidua and muscularis becomes wavy and serrated, as in the early months of pregnancy. The bearing of this fact upon the separation of the membranes is that the separation can occur only at the basal ends of the festoons. So only a minute amount of decidua is left in the uterus.

The mechanism of separation of the placenta is discussed. In the retained placenta, no evidence of beginning retroplacental hemorrhage was found. The other theory seems supported, namely, that the diminution of the placental site causes separation to start.

In 7 cases, separation was in the compact layer of the decidua; in 28 cases, in the spongy layer. Frequently the placental site could not be identified macroscopically after separation, and only microscopically by the discovery of foetal cells. At the site there is a conversion of both arterial and venous vessel walls into fibrinoid tissue.

In cases that had had repeated Caesareans, it was frequently hard to identify the old scars. One case, however, who had a stormy convalescence, showed a very thin muscularis at the scar. Another specimen was removed because of rupture through a thinned former scar. If the convalescence has been normal, the old axiom, "Once a Caesarean, always a Caesarean," does not seem justified.

Excellent drawings illustrate the article.

J. T. S., Jr.

Placental Transmisson: Total Creatinine in Plasma, Whole Blood and Corpuscles of Mother and Foetus. (Additional Analysis by a New Method.) E. D. Plass, *Johns Hopkins Hosp. Bull.*, 1917: XXVIII: 297.

Previous studies of creatinine and creatine transmission showed that maternal foetal sera have the same concentration of these two substances,

but that the whole bloods show the same definite relationship only in the preformed creatinine, whereas the total creatinine and subtracted creatine values are higher in the foetal blood.

An acetic acid precipitation method is now used that gives consistently lower creatinine values than the old Folin's method. This Folin's method is inaccurate because other substances besides the creatinine give a color test similar to the creatinine test, and thus make the readings too high. The technique of this acetic acid precipitation method is given. The results in a series of twelve sets of sera are essentially the same as those previously obtained: the view is confirmed that the placental transmission of the creatinine bodies is by simple diffusion. Tables present the actual figures.

Ten sets of maternal and foetal whole bloods were examined. No similar parallelisms can be traced between the amounts of total creatinine in the whole blood and the corpuscles. In some cases the maternal quantity is greater; in some, the foetal; and occasionally the two values are practically equal.

Conclusions:

No definite relationship has been shown to exist between the maternal and foetal whole bloods in a given case, but plasma values agree closely.

In the parturient woman and in the new-born child, there is usually an increased ability of the red blood cells to store creatine. J. T. S., Jr.

A Statistical Study of the Causes of Abortion. G. D. Royston, *Am. J. Obstet.*, 1917: LXXVI: 571-583.

The article is based upon a study of 563 patients in the gynaecological service of Washington University Dispensary, St. Louis. The histories of 164 abortions were subjected to detailed study. The results are, briefly, as follows:

Probably over 25 per cent of all abortions are induced.

Only about 2 per cent of the induced abortions are justifiable (therapeutic).

Sixty per cent of all induced abortions result in more or less permanent sterility.

Abortions induced by the midwife, by the patient herself, and by the physician, rank in danger in the order named.

A positive Wassermann reaction is obtainable in about 25 per cent of all women who have aborted, but less than a third of these syphilitic women give any history or symptom of the disease.

Syphilis interrupts pregnancy in any and all periods of gestation.

Syphilitic women abort in more than 60 per cent of their pregnancies.

Renal deficiency interrupts pregnancy only when there is renal decompensation, as indicated by high blood-pressure, headaches, drop in the phthalein output, etc.

Pregnancy may be interrupted as a result of renal deficiency at any period of gestation.

The phthalein test is of great value, though not infallible, as an index of the true kidney function.

Sixty-five to 90 per cent of all women who have aborted will show some pathologic lesion of the genitalia.

A poor state of nutrition, influencing an interruption of pregnancy, is usually but a symptom of a more important underlying condition, as syphilis, impairment of the heart, lungs, or kidneys. J. T. S., Jr.

ABSTRACTS IN DERMATOLOGY

The Comparative Value of the Wassermann, the Colloidal Gold and Other Spinal Fluid Tests: A Study of 203 Cases. E. M. Hammes, *Am. J. M. Sc.*, 1917: CLIV: 625.

Summary: 1. The most constant finding in a pathological spinal fluid is a positive globulin. It is indicative of an inflammatory process, but it is of no specific import.

2. Pathological cerebrospinal fluids usually show some lymphocytosis. However, the number may be normal. Fluids from cases of meningitis almost invariably give a high cell count.

3. As an index of pathological change in the cerebrospinal fluid the colloidal gold reaction is more delicate than any other test here employed.

4. Normal spinal fluid usually causes no reduction of the colloidal gold. A slight reduction in any of the dilutions is of no diagnostic import, and may occur in normal spinal fluids.

5. Cases of tabes and cerebrospinal lues gives a typical colloidal gold curve in the luetic zone. Although in tabes the intensity of the curve is usually greater, it is not sufficiently constant to be of diagnostic value between the two conditions.

6. In paresis the colloidal gold test is sufficiently frequent and characteristic to warrant the term "paretic curve" and is of great diagnostic value. However, it has been observed in cases of tabes, cerebrospinal lues, multiple sclerosis, brain abscesses, and once in puerperal eclampsia.

7. In meningitis the colloidal gold curve usually occurs in the higher dilutions, and is probably of value in the diagnosis of doubtful cases.

8. In spinal fluids with normal findings, except a paretic colloidal gold curve in doubtful cases, the possibility of a multiple sclerosis must be strongly considered.

9. The colloidal gold test is more delicate than the Wassermann test. Spinal fluids fromluetics have given a colloidal gold luetic curve with a negative Wassermann. However, we have never observed a normal colloidal gold curve with a positive Wassermann in the spinal fluid. Exceptions to this are the congenital luetics.

10. Under antiluetic treatment there is usually a reduction in the cell count and globulin of the spinal fluid; frequently the Wassermann becomes negative; rarely is there a change in the colloidal gold test.

11. No spinal fluid test (except the presence of bacteria) is specific. Every test is simply that much co-operative evidence and should be combined with the history of the case and the clinical findings. H. N. C.

The Zoniform Syphilis. Gaucher, Bizard, L., and Bralez, J., *Ann. de mal. Vén.*, 1915: X: 577; *Review Ann. de dermat. et Syph.*, 1917: VI: 479.

The authors have collected 26 observations, mostly personal, of zoniform syphilides. They are tertiary in character (outside of one case coming one month after chancre), the lesions are generally papulosquamous and affect a certain zone supplied by a peripheral nerve. They are often found on the thorax, are generally unilateral and not accompanied by fever or neuralgia pains. They last several months and leave pigmentations in healing. The lesions are perhaps analogous to that of a zoster.

(The reviewer has seen one such case with an eruption along the thoracic intercostal nerve and with alterations in the spinal fluid.) H. N. C.

Black Tongue and Keratochroma-glossitis. Leban, *Ann. de dermat. et Syph.*, 1917: VI: 450.

The author reports 19 cases of this puzzling condition. In 10 of them the lesion came on entirely in conjunction with an infection of nearby organs

and went away as soon as these conditions cleared up. In the others the trouble was very slow in its evolution. In the 10 cases it came with luetic angina, suppurating tonsilitis (2), acute stomatitis from the stomach (2), acute pneumonia, purpura hemorrhagica, lichen planus of the mouth and an episode of general lichen planus. He found that the intensity of the coloration seemed proportionate to the length of the papillae. The color is explained by some as a pigmentation—this is false, however, as the lesions are readily explained as a hyperkeratinisation. The author made some unsatisfactory cultural experiments.

H. N. C.

ABSTRACTS OF OPHTHALMOLOGY

Swimming-Bath Conjunctivitis. Hunttemüller and Paderstein, *Deutsche Med. Wochen.*, 1913: XXXIX: 63.

These authors have reported a series of fourteen cases of infectious conjunctivitis occurring for the most part in patients who had frequented the same public bath. It was the occurrence of the infection in short succession in two of the attendants of this same swimming-bath which aroused the suspicion of a natatorium endemic. The affection of the conjunctiva closely resembled acute trachoma. No bacteria were found, but in the epithelial cells of the secretion typical inclusion bodies were observed which were very similar to the chlamydozoa found in trachoma. The infectious nature of the disease was shown by producing it in apes by transference of the virus. Cell-inclusions were found in the conjunctival secretion from these animals. In several of the cases which the authors observed the affection was unilateral. The impression gained from the study of this affection was that it is a disease sui generis rather than an attenuated form of trachoma. The water in the natatorium was daily renewed and the tank was thoroughly scrubbed with an antiseptic solution once a week, hence the contagion could only occur through bathing water which was recently infected. R. B. M.

Swimmers' Conjunctivitis. Harry S. Gradle, *Ophthalmology*, 1916: XII: 653.

A series of eighteen cases of acute conjunctival infection were observed in young adults by this author. The symptoms appeared within three days of swimming in a confined pool. Four had been in Lake Michigan. Some of the cases were unilateral, but the second eye usually became affected within a week. There was moderate photophobia and oedema of the lids. The tarsal conjunctiva and still more the conjunctiva of the fornices, showed swelling, roughening and injection. A small amount of mucopurulent secretion occurred, particularly at night. In one-half of the cases scrapings from the conjunctiva were made, and in those where silver nitrate had not been used in the treatment, cell inclusion bodies were found. The usual duration of the disease under treatment was three weeks, the clinical course serving to differentiate it from fresh subacute trachoma. The author believes the condition to be a definite clinical entity.

R. B. M.

ABSTRACTS IN LARYNGOLOGY, RHINOLOGY AND OTOTOLOGY

Ozena Among the Various Races of the Earth. Dr. J. N. Roy, *The Laryngoscope*, 1917: XXVII: 679.

The author, during extensive travels, has investigated the occurrence of ozena among the various peoples of the globe, which he divides into three families, the white, the black and the yellow.

Ozena is found in all races. It is most common in the yellow race. The frequency of septal deviations in this race and habits of uncleanness are predisposing factors.

The blacks of Africa, Oceania and the West Indies are not afflicted with ozena. Examination of five thousand blacks in Africa, representing numerous tribes, failed to disclose a single case of ozena. The blacks, when transported to South America, Central America and the United States, become victims of the disease.

That ozena is of bacterial origin seems now to be generally accepted. The cocco-bacillus of Perez is the specific organism of the infection. The geographical distribution of ozena lends proof to the bacterial origin of the disease.

C. E. P.

Indications for the Mastoid Operation in Acute Otitis Media. E. B. Dench, M. D., *Jour. A. M. A.*, 1917: LXIX: 878.

Every case of acute suppurative middle ear inflammation is also a mastoiditis. Drainage through the opening in the tympanic membrane may be sufficient to allow recovery in the middle ear and mastoid; if not, then drainage through the mastoid becomes necessary.

The indications for posterior drainage, by which is meant a complete mastoid operation, are as follows:

1. *Pain*.—The persistence of severe pain after free drainage of the middle ear by incision of the drum membrane.

2. *Temperature*.—Persistent high temperature or remittent temperature with exacerbations, call for operation. Absence of fever is not a contraindication, for many cases are afebrile.

3. *Otoscopic Examination*.—Persistent bulging of the upper and posterior quadrant of the tympanic membrane with sagging of the adjacent postero-superior canal wall is a pathognomonic sign of mastoiditis.

4. *Bacteriological Examination*.—The presence of the streptococcus capsulatus almost invariably demands posterior drainage. A patient infected with this organism should be carefully watched, as he is not safe until the middle ear has absolutely returned to normal.

5. *Duration of the Inflammatory Process*.—An inflammation in the middle ear, which has been drained by incision of the drum membrane should clear up in ten days, or at the most, three weeks. If there has been a spontaneous rupture of the tympanic membrane and the discharge persists longer than six weeks, a mastoid operation is indicated.

6. *Course Following Acute Symptoms*.—A very important class of cases is the one in which there has been a history of acute otitis media, but the discharge has stopped, possibly for several months, and the membrane healed. The patient has symptoms indicating a toxemia. Otoscopic examination is a valuable aid in diagnosis, as the middle ear will not have returned to normal. These cases are frequently the ones with streptococcus capsulatus infections.

7. *History of Repeated Incisions*.—Otitis media requiring repeated incisions is almost invariably a mastoiditis demanding operative interference.

8. *Impairment of Hearing*.—When, in a case of acute otitis media, there is a marked impairment of function, lasting for three weeks, whether or not the membrane is intact, posterior drainage is indicated.

9. *Involvement of the Static Labyrinth*.—Vertigo and spontaneous nystagmus, usually toward the diseased ear, calls for prompt operative interference.

10. *Meningeal Symptoms*.—Localized headache is a sign of extradural abscess and general headache may indicate a meningitis. Examination of the spinal fluid is a diagnostic aid.

11. *Roentgenoscopy*.—In doubtful cases the roentgenogram is of great value in diagnosis.

C. E. P.

Further Experience With the Beck-Pierce Tonsillectome. H. Dupuy, *Laryngoscope*, 1917: XXVII: 769.

Under the above title the author gives his further experiences in a series of some one thousand (1,000) tonsillectomies. He regards the procedure as the ideal operation in that "it seeks to enucleate the whole tonsil, *leaving behind the greatest amount of aponeurotic tissue.*" The operation demands practically a single instrument and leaves "as an end result fewer such legacies as cicatricial contractions, with distorted pillars and consequent palatal and pharyngeal deformities."

Technique.—This consists in lifting the tonsil, from below upward, into the supra-tonsillar fossa and pushing it through the ring with the index finger and later enucleating the tonsil with the snare. Occasionally the procedure of Sluder is resorted to and the inner surface of the angle of the lower jaw is used as a fulcrum, instead of the index finger. At least two sizes of rings, as well as ambi-dexterity, is essential to the operation.

Hemorrhage, as might be expected, is greatly reduced, though it is occasionally necessary to ligate if one wishes to take no chances. The drawing of the snare slowly through the tissues also lessens the danger of bleeding.

"Reaction locally and constitutionally is less than by any other method. The fossa is lined with a smooth aponeurosis which closes the channels for local and systemic infection, while the possibility of destruction of such structures as muscles and mucous coverings of the pillars is reduced to a minimum."

Age.—The author's first 500 cases were for the most part in children between three and five years, with 85 per cent successful cases. Improved technique has increased this percentage to 95 per cent. Further experience has convinced him of the applicability of the method to adult cases, under both local and general anesthesia. The use of the method in adult cases is after all largely a matter of perfected technique, which he believes will ultimately enable him to remove all varieties of tonsils, in adults as well as children, by its use.

W. B. C.

ABSTRACTS IN PATHOLOGY

The Etiology of Arteriosclerosis:: Louis M. Warfield, M. D., *J. Lab. and Clin. Med.*, 1917: III: 115.

The ever interesting problem of causation of numerous changes in blood vessels grouped under one name of arteriosclerosis is still far from being solved.

Roughly speaking, there are three factors usually mentioned: (1) Infectious diseases; (2) poisons elaborated by the faulty protein digestion, and (3) individual susceptibility, that is, hereditary tendencies.

The author has studied 500 cases of infectious diseases, including typhoid fever, infectious arthritis, pneumonia, measles, scarlet fever, smallpox, etc., and as a result of this study was forced to the conclusion that infection has not played any important role in causing arteriosclerosis.

A. A. E.

The Etiology of Common Colds. George B. Foster, Jr., M. D., Major, M. C., U. S. A., *J. Infect. Dis.*, 1917: XXI: 1.

It appears quite likely that the etiology of common colds has been solved at last.

The virus occurs in the nasal secretion; it is capable of passing through Berkefeld filters.

By the employment of special anaerobic technique the virus can be cultivated in vitro and is capable of being recultivated in subcultures.

A peculiar micro-organism has been isolated from cultures made from the filtered nasal secretions in common colds.

It is stained best with Giemsa's stain.

A. A. E.

DEPARTMENT OF THERAPEUTICS

Conducted by J. B. McGEE, M. D., Cleveland

Bronchial Asthma: Chandler Walker, in the *Journal of Medical Research* for September, presents the treatment of bronchial asthmatics who are not sensitive to proteins. Patients with bronchial asthma may be divided into two groups, namely, those who are sensitive to proteins and those who are not. The statement that a patient is not sensitive to proteins needs some qualification, since he may be sensitive to some protein with which he was not tested, and furthermore the patient might fail to give a positive skin reaction with some common protein, because this protein may have been changed in some way by manipulation in its preparation, so that it causes no reaction with that patient although he may be sensitive to it. His conclusions are: (1) Occasionally the serum of non-sensitive patients with bronchial asthma agglutinates strains of streptococcus pyogenes aureus; in such cases treatment with vaccines of this organism should be given and relief from asthmatic attack usually results. Occasionally attacks of bronchial asthma are relieved by treatment with diphtheroid vaccines; in this study one patient in six was relieved by such vaccine. Attacks of bronchial asthma, or at least symptoms which resemble them, may be associated with conditions or diseases which are quite remote from bronchial asthma. It is quite possible that so-called bronchial asthma in patients who are sensitive to proteins is not true bronchial asthma; it is evident that cardiac, renal, pulmonary and pituitary disease, all may cause symptoms which simulate bronchial asthma.

Bright's Disease: J. M. Anders, in the October number of the *Therapeutic Gazette*, states that there are two principal criteria which should serve to guide us in the treatment of chronic Bright's disease. They are the general condition of the patient as it is influenced by the progress of the affection, and the rate of metabolic excretion as determined by modern methods of examination. We should also pay due regard to the results of clinical and microscopical studies of the urine, although in his experience both albumin and tube casts have at times shown a tendency to increase under a judiciously restricted diet, on the one hand, and to remain uninfluenced by a pretty generous diet, on the other. The amount of urea excreted in the twenty-four hours is an indication of the outcome of the case and should be carefully and repeatedly estimated. While seeking to afford protection to the diseased kidney by extreme moderation in diet, especially in proteins, due attention is to be paid to the matter of avoiding deleterious effects to all other organs—to the metabolism. The strength of the patient is to be preserved by adapting sound hygienic therapeutic and dietetic principles to the individual case. Drugs, while not curative, may counteract certain dangerous tendencies resulting from interference with kidney excretion. Saline cathartics in concentrated solution, in the early morning, so as to produce two or three watery discharges daily, are useful. Mercury in all of its forms is to be omitted, since it has been shown that this drug has a selective affinity for the kidney and is here harmful. No aspect of the therapeutics of Bright's disease has engaged attention to so great a degree as the associated hypertension. The lesson has not yet been learned when active interference with this oftentimes compensatory mechanism should be commenced. While affording therapeutic assistance to meet high tension, the effects upon the heart, the urinary output and the urea and creatinin content of the blood must be noted. A too great reduction of the arterial tension, a prevalent mistake, is undesirable, being attended with danger of uremia and serous transudates, owing to insufficient urinary excretion. Myocardial exhaustion, which manifests itself in the terminal stage of cirrhotic kidney with signs of cardiac dilatation, scanty and albuminous urine and anasarca, requires heart tonics and stimulants. He believes kidney organotherapy to be still in the experimental stage.

Corpus Luteum: In the *New York Medical Journal* for October 20th, Walter T. Dannreuther presents his further clinical experience with corpus luteum organotherapy. His former conclusions based on a series of eighty cases were (1) Corpus luteum extracts are superior to similar preparations made from entire ovaries. (2) Suitable cases for corpus luteum organotherapy must be carefully selected. (3) The indications for the administration of a lutean extract are distinct, and its use should be limited to these conditions. (4) The administration of corpus luteum is followed by certain definite phenomena. (5) It is of the utmost importance to use an extract obtained from the ovaries of pregnant animals only. (6) Five-grain doses, three times a day, are usually all that are required. (7) There is great necessity for constant supervision of the blood pressure of patients taking corpus luteum; it should not be permitted to fall more than 15 millimetres below the patient's normal pressure, and never below 90 millimetres. (8) Personal experience has demonstrated that corpus luteum organotherapy is of considerable value in clinical practice. (9) In one patient menstruation has been established after complete extirpation of all ovarian tissue by the use of corpus luteum extract. More extensive observations in his own practice and that of others have verified and justified these contentions. Results are sometimes anticipated too soon, and its use is not continued sufficiently long to demonstrate its efficiency. His belief as to dosage is that it varies more or less with the individual case, and no fixed rule can be formulated. The depression of blood pressure produced is more pronounced in the natural or induced menopause than in the other types of pathological conditions for which corpus luteum is given. In many cases the simultaneous administration of thyroid or some other organic extract will enhance the action of the corpus luteum by aiding in the restoration to normal of the general endocrine equilibrium. He has been using the soluble aqueous extract of corpus luteum for more than a year and believes from such use that: 1. The subjective symptoms, particularly vertigo and nausea, so often mentioned by patients ingesting the desiccated extract before establishing toleration, are seldom noted. 2. Overdosing with the soluble extract is usually manifested by headache. 3. The desired results are more rapidly attained than after the internal use of the ordinary extract. (4) After the influence of the aqueous extract has become apparent, the desiccated extract will maintain the improvement. The value of corpus luteum, especially in the form of the soluble aqueous extract, in the so-called functional disturbances of the ovarian internal secretion, is quite evident. Exact diagnosis is the first requisite, and the proper selection of cases the second. The technic of administration is simple. An all-glass syringe of the Luer type is best adapted for the injection, and these are better made intramuscularly than hypodermically. The belly of the deltoid is the most convenient site. No severe local reactions, general reactions, abscesses nor anaphylaxis have occurred in any instance.

Hemorrhagic Diseases: S. H. Hurwitz, in the November number of the *American Journal of the Medical Sciences*, considers the etiology and treatment of hemorrhagic diseases. Under the head of general treatment he states that although one must admit that as regards a specific therapy our elaborate studies have contributed little, but they have made possible a more rational and a more critical treatment of hemorrhagic conditions. Although clinical reports as to the value of calcium therapy have been conflicting, the general idea has been widely accepted that the coagulation time in disease can be shortened at will by giving the proper dose of calcium. According to the best experimental work there is only one condition in which calcium feeding is indicated, namely, in obstructive jaundice with a delayed coagulability of the blood. Lee and Vincent point out that to be effective calcium must be administered in large doses (100 grains a day), and must be given over a period of several days before any marked effect on the coagulation time is seen. The serum form of treatment has

gained considerable popularity since Weil, in 1905, reported the successful therapeutic results following the use of serum in hemophilia. The author believes that as to its usefulness too little attention has been paid to the evidence gained from well-controlled experiment. The essential coagulation—accelerating substances contained in fresh serum is thrombin. In addition it may contain a small amount of thromboplastin. It should be emphasized that old serum differs markedly from fresh serum, as on standing a few days the thrombin of the serum is converted into an inactive form—metathrombin—so that old serum contains less thrombin and more anti-thrombin, and it has been shown that old serum *retards* rather than *hastens* the clotting of blood not only in normal animals but also in pathological conditions like hemophilia. On the basis of these experimental studies, he believes that old serum—antidiphtheritic and the like—should be entirely discarded. In fact, he questions the value of even fresh serum. In the absence of a specific therapy the use of whole blood, which contains all of the factors concerned in clotting, appears to be the most logical, and in fact remarkable success has attended its use in the hands of a large number of clinicians. In fact, transfusion may be looked upon as a specific therapy in controlling hemorrhage in hemophilia. For control of external bleeding, the local injection of whole blood, defibrinated blood, and of serum into the tissues about the bleeding surfaces, have all given good results. Kephalin applied locally early arrests the hemorrhage.

Pneumonia: The *Medical Record* for November 10 considers editorially the serum treatment of pneumonia. For years, ever since the Klemperers in 1891 announced that they had produced a serum for the cure of pneumonia, which, however, did not cure, attempts have been making to perfect a specific therapy for this disease. Experiments with animals appeared to demonstrate that they could be immunized against lethal doses of pneumonia by vaccine treatment and that the serum of such immunized animals was protective in other animals against infection, or even curative when certain precautions were observed. However, it is not always safe to argue from rabbits to man, and the attempts to cure pneumonia in man by similar methods have quite uniformly failed. As we now know, there are several strains or types of the pneumococcus, and the serum derived from one type is hardly more effective in an infection by another strain than would be antimeningococcic serum in such infection. In the case of one strain, indeed, that called *pneumococcus mucosus*, every effort to produce an immune serum has hitherto given no satisfactory results. In recent experiments at the Rockefeller Institute, Avery, Chickering, Cole and Dochez have succeeded in preparing an effective serum for only Type I infections, but for them they appear to have produced a really curative serum. As about one-third of all cases of pneumonia observed by them are associated with Type I pneumococcus, it is evident that it is well worth while to have a serum that will cure most of them, reducing the mortality from 25 to 7.5 per cent or less. The results obtained by the use of this serum are therefore seen to be most encouraging, but they as yet hold out only a hope of a successful specific therapy of pneumonia, and do not actually promise it. Pneumonia is caused by such a variety of organisms that even were there a specific serum for each one, the employment of a polyvalent serum covering all forms of infection would be manifestly impractical. All the difficulties in the way of a general employment of serum therapy in pneumonia are, however, we may be permitted to believe, only temporary and one is justified in hoping that these workers, or others inspired by them, will eventually find a remedy for the remaining 66 per cent of cases of pneumonia, and one that is as readily applicable by the family physician as is the administration of diphtheria antitoxin. That such a remedy is urgently needed cannot be questioned, for lobar pneumonia today causes more deaths than any of the other acute infectious diseases and moreover its death rate is slowly but steadily rising.

Diuretics: The November number of the *Medical Council* treats editorially of the diuretics vs. rational case-management. Xanthine derivatives—caffeine, theobromine and theophylline of the U. S. P. and several approved proprietary products of similar type—are modern diuretics quite efficient in their way, and largely displacing the long list of vegetable diuretics, the potassium salts, sometimes disadvantageously. There is no doubt of the efficiency of these newer diuretics, but there is also no doubt that their unwise use is more apt to do harm than is the misuse of the older and less potent diuretics. Diuretics of the old types were rather indiscriminately used, sometimes properly and more often improperly, and harm rarely resulted; but physicians need to have attention called to the fact that the potent diuretics *must* be used with care, especially in the treatment of nephritics. Whatever may be said of diuretics in other conditions, there is in an uncomplicated nephritis seldom need for an increased urinary output, or at least only at times. It is in patients with cardiac insufficiency as the major condition, and some nephritis as the minor condition, that diuretics are indicated, and even here they act best when given intermittently or to follow up digitalis medication. Rather unfortunately, diuretics seldom do much good in edema, and in cases so severe that detoxication is necessary or desirable, the kidney does not respond to diuretic drugs and may be irritated by them. There is little or no evidence that diuretics remove the toxic substances which are a factor in severe nephritis, and one must remove them through the skin and intestinal tract. Assuredly the routine use of diuretics in nephritis is an assault upon the kidneys, though one is often justified in using cautiously the milder diuretics and watching results. On the first indication of harm or lack of physiological response the drug should be dropped. Briefly, if the disease is circulatory diuretics may be indicated, while if it is purely renal they are seldom indicated. The xanthine derivatives are too irritating to use in nephritis, at least as a rule. Digitalis and the salts of potassium, especially the citrate, may be given in selected cases. The steady use of magnesium sulphate as a purgative is not to be commended; it should be alternated with other purgatives, but mercury inflames the kidneys. Do not assault the kidneys with mercury; it is done too much. Apocynum often does excellent service in the edema of nephritis.

NEW AND NONOFFICIAL REMEDIES

Halazone—Abbott.—Parasulphonedichloramidobenzoic acid. It is said to act like chlorine and to have the advantage of being stable in solid form. In the presence of alkali carbonate, borate and phosphate it is reported that halazone in the proportion of from 1:200,000 to 1:500,000 sterilizes polluted water. Halazone is used for the sterilization of water in the form of halazone tablets, each containing 0.004 gm. halazone mixed with sodium carbonate and sodium chloride. The Abbott Laboratories, Chicago (*Jour. A. M. A.*, Oct. 6, 1917, p. 1166).

Camiofen Ointment—An ointment obtained by mixing iocamfen (a liquid obtained by the interaction of iodine 10, phenol 20 and camphor 70 parts) with an equal weight of a lard-wax-oil of theobroma base, but containing nearly all of its iodine in the combined form. It has the properties of fatty iodine compounds, phenol and camphor, and is used in skin diseases. Schering and Glatz, New York (*Jour. A. M. A.*, Oct. 20, 1917, p. 1343).

During October the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with new and nonofficial remedies:

General Drug Co., New York:

Arsenobenzol (Dermatological Research Laboratories, Philadelphia Polyclinic).

Jno. T. Milliken & Co.:

Acetylsalicylic Acid Capsules—Milliken.

Acetylsalicylic Acid Tablets—Milliken.

Monsanto Chemical Works:

Acetylsalicylic Acid (Aspirin)—Monsanto.

Schering and Glatz:

Atophan—S. & G.

E. R. Squibb & Sons:

Silver Protein—Squibb.

Standard Oil Company of Ind.:

Stanolind Surgical Wax.

The Academy of Medicine of Cleveland

ACADEMY MEETING

The one hundred and forty-second regular meeting of the Cleveland Academy of Medicine was held Friday, November 16, 1917, at the Cleveland Medical Library, the President, Dr. R. K. Updegraff, in the chair.

The minutes of the last meeting were read and approved. The minutes of the Council meeting of November 9th were read and approved.

Dr. C. E. Ward presented a patient with fibroma molluscum of the chest wall.

Dr. B. E. Sager presented a patient whom he stated had been very much benefited by arc light treatment for tuberculosis, the condition being arrested in four treatments. He also outlined the history of two other cases and showed the X-ray plates of the chests. He also showed an X-ray plate of the diabetic toe in a case reported at a previous meeting.

Dr. M. H. Jones, speaking for the Medical Relief Association, reviewed its purposes and stated the organization was now complete and urged members to sign and return the pledge cards.

Dr. J. J. Thomas spoke in behalf of the Dr. Geo. H. Matson Memorial Fund. He made a brief statement of the work of Dr. Matson and of the circumstances which made it befitting that the profession should raise such a fund. An immediate contribution of a dollar from each individual who was so disposed was taken up.

Dr. J. B. McGee reported that as a result of the nominating ballot the following had consented to allow their names to be placed on the ballot:

For President—Geo. E. Follansbee.

For Vice-President—F. A. Oakley.

For Trustees—J. J. Thomas, E. Klaus, A. W. Lucke.

The chair called attention to the fact that nomination would have to be received from the floor to fill the ballot. The name of Dr. Sawyer was suggested for President, but upon statement from Dr. Brunner that Dr. Sawyer had declined to allow the tellers to report his name for this position, the name was withdrawn.

The following additional nominations were offered from the floor:

For President—C. H. Lenhart, F. C. Herrick.

For Vice-President—H. B. Ormsby, H. C. Yarian.

There being no additional nominations they were declared nominated.

Five names were offered from the floor to complete the ballot for Trustees, but through an oversight no ballot was taken to determine which three should be declared nominated.

The committee hopes to take out \$10,000.00 insurance for every man entering the Medical Service from Cleveland, and a general campaign among the doctors of the city must be instituted to meet the expense.

In case of any surplus left in the fund at the end of the war, it will probably be made into a permanent fund for suitable cases among retired physicians.

Dr. J. J. Thomas read a letter regarding a memorial fund for the widow and children of Dr. George H. Matson of Columbus, for years a member of the State Medical Board. The letter outlined the need and advisability of such a fund and the disposition to be made of it. A minimum amount of \$2,500.00 is to be raised and of this sum \$350.00 is apportioned to Cleveland. Dr. Thomas then proposed and carried out a most novel and effective plan for the collection of this money.

Program:

Major George W. Crile, the speaker of the evening, was then presented by the chairman. His subject was "Surgery of the War."

In opening Dr. Crile spoke of the great interest Cleveland has in the war, as manifested by the large attendance present. He asked that his talk be taken as a personal message from friends that anyone of the Academy might have with the Lakeside Unit in France.

The Unit, especially the enlisted men, were perfectly ignorant for the most part of anything pertaining to military life or duties. The pictures shown certainly demonstrate the unusual success attained by those responsible for teaching them things military.

The nurses of the Lakeside Unit have had many honors conferred upon them ever since their departure from the United States. Their work has been of the very highest character and has caused many favorable comments in all quarters, especially among the British medical officers. Individually and as a whole the nurses have been a great credit to Cleveland and the United States. Dr. Crile condemned in the most scathing terms any reports reflecting on the ability and character of any of the nursing unit.

Views were shown of the enlisted men of the Base Hospital No. 4 being trained on board ship; of various sorts of devices for the treatment of fractures; a chart representing the fluctuation of admissions to the hospital from month to month was reproduced. In connection with pictures of **French children, whose faces showed the deadening effect of the war and the effect of poor nutrition**, Dr. Crile paid eloquent tribute to France and her people for the terrific sacrifices that they have made in the cause of humanity. He pleaded for a ready response to any appeal for aid for these unfortunate victims of the war.

But while the French are a wonderful people and deserving of all we can do and wish, still one will perhaps experience a great change of ideas regarding the British. Some of us still have a childhood prejudice against England and the English, but this is wiped away when we try to appreciate the tremendous sacrifices that Great Britain has made as well as France—sacrifices that have probably preserved our national integrity. We have really been in the war since the sinking of the *Lusitania*, but France and England have fought our battles for us. The national character of the Britisher is strikingly brought out by the war. When a "Tommy" is put in a trench to hold it he never leaves it. He may die but he never quits. The British army will never leave Flanders except after victory.

Dr. Crile brought personal greetings from every man in the Unit, 23 men in all, and described the activities of the individual men as related to the organization, work and recreations of the Unit.

Dr. Crile then gave some most interesting facts concerning the actual work being done at the Base Hospital, as well as at the casualty clearing stations.

Bullets may do all sorts of most extraordinary things. One case is cited where the bullet entered the shoulder and passed downward, traversing the thorax and abdomen and finally after it had become spent dropping into the man's pocket. The man lived after this experience. In another case a bullet was found in the heart by X-ray. On a subsequent examination it could not be found there and it was finally located in the left iliac artery.

Another man was shot through the left side of the neck and both arms were paralyzed. After some speculation the phenomenon was explained this way. The bullet had cut the brachial plexus on the left, causing the paralysis on the left. The paralysis on the right was explained by an embolus in the cortex of the brain coming from the traumatized carotid artery.

Mud itself may become a missile and cause serious damage or even death. It is driven by the high explosive shells with such force as to penetrate the skin and following the tissue planes do all sorts of curious things.

Nitrous oxide anesthesia has come into general use throughout the war zone. It is doing wonderful work in cases showing the peculiar kind of exhaustion that is found on the front.

Dr. Crile spoke most highly of the Americans who have faced the situation at the front, and remarked that all have won credit for themselves and their country. For instance, one Cleveland man at present lives at a place that has won the name of "Hell's Fire Crossing" on account of the intensity of the shelling there.

Infections. The first twelve hours is the period of contamination, then the real infection starts. The modern high velocity bullet devitalizes tissue over a rather wide area surrounding the actual wound. If this tissue be resected and the wound be treated in most any aseptic manner it will heal. Whenever practicable the Carrel-Dakin method of treatment is the best but as it requires a rather complicated apparatus and the patient must be kept quiet, it cannot always be used. "Bipp" is being used with good results.

Fractures. Great advances have been made in the treatment of all fractures, especially compound fractures of the thigh. Blake, of New York, has devised a method of handling these cases so that there is no shortening at all. "Surgery is just learning how to treat fractures."

It is interesting to record that wounds entering the knee joint are simply cleaned and sewed up without drainage, and 90% of them stay closed. The same is true for penetrating wounds of the thorax. Even when infection has started in the blood clot, 50% of the cases heal up perfectly. In perforating wounds of the abdomen 50% recover, and in the fatal cases more die of complications other than peritonitis than of the peritonitis itself.

War surgery is not as some seem to think, merely a chance to learn how to operate. A surgeon there faces greater responsibilities and greater problems than in civil practice and much more versatility is required of him. So we cannot all do actual work on the front, but there are many problems that are worthy of thought and consideration at home. Lice and scabies cause perhaps one-fourth of all invalidism in the army and consequently they constitute a real problem. A method of eradicating them would add at least 100,000 men to the armies of France and England alone. Other conditions worthy of investigation are trench nephritis, trench heart, trench fever, phosgene gas poisoning, mustard gas or blister gas, war neurasthenia, and many others.

He related some of the peculiar happenings, such as his surprise upon removing from a wound a tracer bullet, which contains phosphorus and therefore smokes upon being open to the air; the things which bullets sometimes do; the depth to which bits of mud may be buried in the body by the force of exploding shells, etc.

The universal rule is to operate in all cases as soon as possible after the injury; the earlier the operation the less the resulting morbidity and mortality. In avoidance of infections the critical period is within the first twelve hours. Within this period a block resection of the damaged tissues gives the best results.

In closing Dr. Crile pointed out that there are a number of problems that can be solved by individuals not at the front. He expressed the opinion that the survival in this war will be to those nations most efficient in men and fertile in ideas.

Dr. Crile emphasized how enormously serious the war was for every one of us—it is indeed our own war. War is a practical application of chemistry and physics in the struggle for the existence of nations. The surviving group is the one that produces the most effective ideas and the most efficient men to carry out the ideas. Every interest and every mite of our natural resources must be thrown into the war to win. It is not necessary that one join the American army to gain these ends, for our allies are fighting for the same purpose—and the French and British especially welcome Americans entering their service as brothers. But no matter where you live or the nature of your service, everywhere and at all times support everything that will help win the war.

OPHTHALMOLOGICAL AND OTO-LARYNGOLOGICAL SECTION

The ninety-second regular meeting of the Ophthalmological and Otolaryngological Section of the Academy of Medicine of Cleveland was held Friday evening, October 26, 1917, at Cleveland Medical Library, the Chairman, Dr. Leo Wolfenstein, in the chair.

The minutes of the last meeting were read and approved.

Program:

Dr. W. H. Tuckerman presented a boy of seventeen with a large fibroma of the nasopharynx, originating from the right side, which was filling the right nostril and had shoved down the soft palate. It was easily visible from the mouth, protruding below the soft palate. Radium had been used; injections of monochloroacetic acid. The radium apparently checked a tendency to malignant degeneration, but did not control the growth. At present bipolar needles with electrolysis is being tried for reduction.

The case was shown at this time to demonstrate the condition previous to treatment. Patient, a lad of about 17 years, has a large fibroma of about a year's standing. When first seen it had the appearance of malignancy and bled very profusely on even the slightest touch. Consequently, on account of the danger of hemorrhage, it was not thought advisable to attempt any surgical procedure. It was treated with tri-chloroacetic acid, with monochloroacetic and later with radium. The mass lost the appearance of malignancy, but was still growing very rapidly. The next treatment adopted was the sharp electro-cautery. Contrary to the generally accepted ideas that as strong a current as 120 milliamperes could be used, 40 milliamperes current caused pain. The patient has had the electro-cautery since September 29, and the growth of the mass seems to be arrested.

This case and other similar cases were discussed by the members of the section.

Dr. J. E. Cogan said that the cases he had seen had had severe hemorrhage on removal by the snare. Dr. Tuckerman stated that the reason for using the electrolysis was the fear of severe hemorrhage such as he had witnessed in other patients. He is trying the suggestion of Dr. Wm. B. Chamberlin, who has reported gratifying results by this method.

Dr. C. L. McDonald presented a railroad man with complete destruction of the labyrinth and hearing of the left ear. He demonstrated the complete absence of caloric reaction in this ear. He stated that another patient whom he hoped to present exhibited a dead labyrinth, but some hearing was still present.

The case had an added interest in that it was an industrial case and emphasized the difficulty in estimating the degree of incapacity for work entailed by injury to the labyrinth.

Dr. McDonald's paper was discussed by Drs. Cogan, Kochmit and W. H. Tuckerman.

Dr. Edward Lauder was unable to be present.

Adjourned 10:00 P. M.

Present: Drs. Wolfenstein, Cogan, Kochmit, McDonald, Willis Hobson, J. F. Hobson, Paul O. Moore, Lueke, F. C. Wood, W. H. Tuckerman, W. C. Tuckerman and Dr. Brown, of Akron.

The ninety-third regular meeting of the Ophthalmological and Otolaryngological Section of the Academy of Medicine of Cleveland was held Friday evening, November 23, 1917, at the Cleveland Medical Library, with Dr. Leo Wolfenstein in the chair.

The minutes of the last meeting were read and approved.

Program—Presentation of Cases:

Dr. C. L. McDonald showed a young woman with persistent pupillary membranem of both eyes, making a very pretty star figure in the partially dilated pupils. The vision of the best eye is 6/60. The fundus could be easily examined with dilated pupil, but neither showed anything abnormal.

In discussion Dr. Wm. E. Brunner advised preliminary decision followed by linear extraction, care being taken to remove as much of the pupillary membrane together with the anterior capsule. He advised against any attempt at optical irridectomy.

Dr. W. C. Tuckerman presented a woman about 45 years of age with vision in both eyes reduced to 2/80, due to optic atrophy. Lenses clear. Failing vision dates back three years. Condition of mentality of patient and inability to fix made taking of field very unsatisfactory. With 4 mm. white square, vision was apparently reduced to the circle of about 30 degrees in either eye. Could get nothing with colors. X-ray was slightly suggestive of involvement of the pituitary body. Nose and throat findings negative. History of nephritis extending over a year, three years ago. Report of general physician—urine was negative.

Dr. McDonald said he had seen the patient several months previous and when first seen by him the urine showed $\frac{1}{2}\%$ albumin and granular casts, confirming the history of nephritis. Later the urine was negative for albumin. Patient was treated with mercury pretiodide on suspicion of syphilis. At that time headache was the chief complaint.

Also discussed by Drs. Bruner and Wolfenstein.

Dr. W. H. Tuckerman presented the boy with fibroma of the nasopharynx, whom he had showed a month previous, to demonstrate the decrease in size under treatment by electrolysis during the last month.

Dr. Prendergast's paper reported three very interesting cases; two cerebellar abscesses and one extradural abscess of otitic origin in which the patients exhibited similar symptoms.

Paper was discussed by Drs. McDonald and W. H. Tuckerman.

The election of officers resulted in:

W. H. Tuckerman—Chairman.

Carlos E. Pitkin—Secretary.

COUNCIL MEETING

At a meeting of the Council of the Academy of Medicine of Cleveland held Friday, November 9, 1917, at the University Club, the following members were present: the President, Dr. R. K. Updegraff, in the chair; Drs. Bernstein, Bruner, Follansbee, Klaus, Lenhart, J. J. Thomas, Tuckerman, Weir and Eddy.

The minutes of the last meeting were read and approved.

On motion the following were elected to membership in the Academy.

To active membership—W. E. Allyn, M. D.; Viola J. Erlanger, M. D.; Chas. H. Hay, M. D.

To associate membership—Wm. L. Holt, M. D.

On motion the resignation of Dr. W. N. Gunsolly and Dr. Otis P. Simonds were accepted.

On motion the names of the following applicants for active membership were ordered published:

R. L. Allen, M. D.; Benj. W. Spero, M. D.

A letter of inquiry from Dr. R. H. Bishop, Jr., in reply to one from the Academy inquiring as to the vaccination of employees in industrial manufacturing plants, was read and the opinion of the Council was asked as to the best way to bring this about.

After general discussion, Dr. W. H. Weir moved that the Secretary communicate to Dr. Bishop that the Council of the Academy considered general vaccination in industrial manufacturing plants of vital importance and that the Health Department should make urgent representations to the Chamber of Commerce to present the importance of the situation through their committees to such concerns; that there should be presented a clear statement of the prevalence of smallpox and the danger of a general epidemic, and that in making such representation to the Chamber of Commerce the Academy of Medicine and the Health Department are in accord. Motion was seconded by Dr. S. L. Bernstein and carried.

Dr. Updegraff called attention to a telephone request from Col. Bond, desiring to know whether the Academy had taken or would take any definite action in the matter of providing medical care for the families of men absent in military service. On motion the chair was directed to convey to Col. Bond that the profession is ready to follow their usual custom and traditions in this matter; that no general action by the Academy is necessary inasmuch as physicians always have taken care of the needy without pay; that the majority of these families have their own family physicians who are acquainted with their needs and therefore are in a better position to judge as to their worthiness than would be any body of physicians especially designated for this purpose; that in the case of individuals needing hospital care no special arrangements are necessary further than the sending of a note with the individual setting forth the situation, and that any general hospital in the city would then take care of that individual through its staff, as is customary in such cases.

Dr. Follansbee commented upon a letter purporting to have been from Mr. Garford, published in the *Plain Dealer*, alleging that some physician had charged a soldier an exorbitant price for some operative procedure. Dr. Follansbee stated that as chairman of the Grievance Committee he had felt called upon to write to Mr. Garford asking for full particulars and for the names of the individuals in order that they might be dealt with if they were members of the Academy. As yet he has received no reply.

It was the sense of the members present that in event no reply was received in a reasonable time, the President of the Academy should address a similar open letter through the newspapers to Mr. Garford.

The chair called attention to a request through Dr. Lowman for contributions to a soldiers' book fund. The raising of this fund is in the hands of Attorney John C. White. The attorneys and the ministers have taken up the matter through their organizations.

On motion the Secretary was directed to carry a notice of the fund in the next announcement of the Academy and to communicate to Dr. White to the effect that, owing to the lateness of the invitation, individual members of the Academy undoubtedly have been approached through other agencies, but that the Academy is carrying an announcement of the fund on the November program.

The possible financial situation of the Academy for the following year was discussed in full, together with a communication from the Secretary-

Treasurer of the State Association calling attention to a resolution passed at the Springfield meeting, May 14th, as follows (quoting in part):

"Resolved: That the House of Delegates of the Ohio State Medical Association do hereby recommend and urge the component county societies to take measures to provide for the continued membership of these members (referring to those in military service) in the Ohio State Medical Association during their term of service."

After considerable discussion the Secretary was directed to inquire from the Secretary of the Council of the State Association what the status of a member of the State Association would be in event that while absent in military service, the local organization found it impossible to pay his State dues.

The Membership Committee asked that the Council take up the name of Dr. Norman T. B. Nobles. On motion he was elected to membership.

There was a general discussion of the advisability of a permanent headquarters for the officers of the Academy. No formal action, however, was taken, as it was felt this matter was a question for decision by the incoming Council.

BOOK REVIEWS

Diseases of Women. By Harry Sturgeon Crossen, M.D., F.A.C.S., Associate in Gynecology, Washington University Medical School, etc. Fourth Edition, revised and enlarged. St. Louis, C. V. Mosby Co., 1917. Price, \$7.50.

A new edition of this excellent work is welcome, as the old Third Edition appeared in 1913. Since that time, the author has published the companion volume, "Operative Gynecology," and collected most of his surgical material into that. In fact, one wonders that he did not reduce the size of the present book by omitting chapters XVI and XVII. These deal with the invasion of the peritoneum and with the after-treatment of operative cases, and so seem to belong rather in the volume on "Operative Gynecology." The book, however, is most excellent, especially when we consider that Dr. Crossen was called to the colors before the book was through the press, and all final revision and correction fell to his associates and editors.

The book is enlarged by 135 pages, and now contains 1160 pages. The illustrations also have been increased from 744 to 800. They are admirable. The general plan and arrangement of the book is the same as in the earlier editions, but additions are found in almost every chapter. The most important addition is Chapter XV. This is written by Dr. Ehrenfest, is 30 pages in length, and is entitled "The Internal Secretory Glands in Relation to Gynecology." This chapter is a good digest of our present knowledge of the topic, but no attempt is made to present any new facts.

Some who still like occasionally to write a prescription for a medicine that is not a proprietary will regret the omission of the "Appendix" found in the former editions. The formulae there given proved quite useful.

We believe this new edition will enable Dr. Crossen's work to maintain its position as one of the very best textbooks in the hands of the profession.

J. T. S., Jr.

The Practical Medicine Series. Series VI, General Medicine. Edited by Frank Billings, M.S., M.D.; Head of the Medical Department and Dean of the Faculty of Rush Medical College, Chicago; assisted by Burrell O. Raulston, A.B., M.D., Resident Pathologist, Presbyterian Hospital. Series 1917. The Year Book Publishers, Chicago. Price of this volume, \$1.50.

One volume on general medicine has already been issued and reviewed in these pages this year. The volume under discussion deals with infectious

diseases and diseases of the gastrointestinal tract. The consideration of infectious diseases shows clearly the mark of the great war in the mass of material presented on typhoid and paratyphoid fevers. The pages devoted to the gastrointestinal tract deal with the diagnosis and treatment of gastric and duodenal ulcer, chronic gastritis, gastroptosis, and gastric symptoms secondary to appendicitis and cholecystitis. These little books offering a review of the progress in the various departments of medicine have always been well received. They are not as complete as some of the more pretentious works, but the material presented is usually well selected. The present volume is up to the usual standard. H. C. K.

A Reference Handbook of Medical Sciences. Embracing the Entire Range of Scientific and Practical Medicine and Allied Science. By Various Writers. First and Second Editions Edited by Albert H. Buck, M. D. Third Edition Completely Revised and Rewritten. Edited by Thomas Lathrop Stedman, A. M., M. D. Complete in Eight Volumes. Volumes VII and VIII. Illustrated by Numerous Chromolithographs and Three Hundred and Thirty-seven Half Tone and Wood Engravings. William Wood & Company, New York, 1917. Price per volume, \$7.00.

These two volumes are the last of the series of the encyclopedia covering the entire realm of medicine and surgery. The work is truly an ambitious one. For the clinician who is not wealthy such works too soon become behind the procession which is always on the move. Such a work represents quite an outlay in proportion for what the average man can spend on medical literature. For the more fortunate and for libraries the problem is quite different. The books are the part of a wonderful work and are the work of the best men of medicine and are edited by the scholarly Dr. Stedman. H. C. K.

ACKNOWLEDGMENTS

Neurosyphilis, Modern Systematic Diagnosis and Treatment. Presented in One Hundred and Thirty-seven Case Histories. By E. E. Southard, M. D., Sc. D. Bullard Professor of Neuropathology, Harvard Medical School; Director Psychopathic Department, Boston State Hospital, etc., and H. C. Solomon, M. D., Instructor in Neuropathology and Psychiatry, Harvard Medical School; Acting Chief-of-Staff, Psychopathic Department, Boston State Hospital, etc. With an Introduction by James Jackson Putnam, M. D. Octavo, 500 pages, with 25 full page illustrations. W. M. Leonard, Boston, Publisher, 1917. Price, \$5.00.

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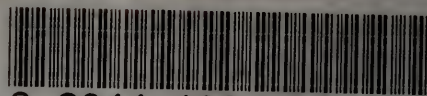
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